THE EFFECT OF PREGNANCY AND CHILDBIRTH ON SEXUAL BEHAVIOUR.

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SUMMARY OF THESIS

In recent years knowledge about sexual behaviour and the treatment of sexual dysfunction has increased considerably. Previous studies have not indicated a standard pattern of change in sexual behaviour during pregnancy. Samples have differed considerably and most larger studies have been retrospective. Similar problems were noted in the review of studies of postpartum sexual behaviour. Many studies involved small numbers of subjects and follow-up rarely exceeded three months. Both positive and negative changes in sexual adjustment have been reported following childbirth and a variety of attitudinal, physical, emotional, social and environmental factors have been implicated.

The aims of this study were to investigate the patterns of change in sexual behaviour which occur during pregnancy, the frequency of changes in sexual adjustment following pregnancy, and the factors responsible for these changes. Information on sexual behaviour and other variables was obtained from 101 women during pregnancy, in the immediate postpartum period, and at follow-up 9 - 12 months after the birth.

Improvements in sexual functioning during pregnancy were rarely reported. Roughly one-third of subjects showed a reduction in the frequency of sexual activity and sexual interest, while almost two-thirds showed a reduction in sexual enjoyment. Most deterioration was reported in the first trimester and there was generally a subsequent improvement though not to pre-pregnancy levels. Subjects with high levels of sexual adjustment before pregnancy were less

likely to experience a deterioration in sexual functioning during pregnancy.

Objective questionnaire results indicated a general reduction in sexual activity and lower levels of sexual adjustment in the postpartum period compared with before pregnancy. Subjective reports indicated that roughly 40% of women felt that there had been no change in the frequency of their sexual activity compared with before pregnancy, while 25% felt that there had been some deterioration, and a further 22% felt that there had been a marked deterioration. Only 13% of subjects felt that the frequency of their sexual activity had increased. Similar results were obtained for sexual interest and sexual satisfaction.

Women with relatively higher levels of sexual adjustment before pregnancy were more likely to experience a deterioration in sexual adjustment postpartum. Some of the factors associated with deterioration in sexual adjustment were unplanned pregnancy, dyspareunia, Caesarian section delivery, anxiety generated by medical investigations, depression, time spent breast feeding and concern about postpartum contraception. Suggestions have been made for improved monitoring during pregnancy and the puerperium, and the development of advisory and counselling services. Recommendations have also been made for further research in this field.

Declaration

I declare that this Thesis has been composed by myself, and that the research described is entirely my own work.

Signed :

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CONTENTS

CHAPTER I

INTRODUCTION

During 1973 and 1974 plans were developed to set up a Sexual Problems Clinic at the Royal Edinburgh Hospital. This was to be a multidisciplinary clinic staffed by Gynaecologists, Psychiatrists and Clinical Psychologists. Analysis of the referrals to the clinic during the first year of operation suggested that pregnancy might be associated with certain sexual difficulties. A surprisingly large number of couples who presented with loss of sexual interest and responsiveness on the part of the woman indicated that the change took place during pregnancy or in the early postpartum months.

The changes in sexual adjustment following childbirth were of a wide variety. In some cases previously orgasmic women were no longer able to achieve orgasm during intercourse, nor, in some instances, from any other form of sexual stimulation. A number of women demonstrated generalised non-responsiveness ranging from moderate loss of interest in sex to profound distaste and aversion for previously enjoyable sexual activities. Couples would often be referred for assessment and treatment about a year after the birth, though there were cases where the duration of the sexual problems was several years. Psychiatric complications were usually absent. The new baby was accepted and integrated into the family structure and there was typically an affectionate relationship between the two marriage partners. This made the changed sexual relationship all the more difficult for the couple to understand and accept.

Many of these observations have been made before. A number of

authors have pointed to the sexual difficulties that women experience after pregnancy and childbirth. Cooper (1970, p. 143) states that;

"change in female sexual feelings including reduction of responsiveness is a fairly well recognised, if poorly understood, complication of gestation - including lactation and breast feeding. Presumably it is bound up with the physical, hormonal and psychological changes that occur during this time". He goes on to say "that the physical and hormonal changes generally reverse spontaneously, usually within one year of the birth, although there may be a tendency for the effects of the psychological inhibitants to persist longer, most cases usually regain their former sexual responsiveness spontaneously, albeit gradually, as a function of time".

No evidence is quoted for the latter assertions. Similarly, Hamilton (1962, p. 98) observed that;

"sexual behaviour and sexual responsiveness are frequently altered after childbirth. The most common alteration in the absence of clear cut psychiatric illness is a diminution of sexual interest, which is usually coupled with a diminished capacity to experience orgasm".

He also suggests that this change has been termed "puerperal dyspareunia" and relates it to such physical causes as painful episiotomy scars and changes in the structure of the pelvic floor. Like Cooper he does not provide supportive evidence for these views which suggest a physical basis for impaired sexual responsiveness. It is surprising to find such important observations unsupported by the citation of research findings.

Observations such as those quoted above have been made by a number of experienced workers in the field of sexual dysfunction, and these opinions have presumably been based upon accumulated clinical case material. However, there appear to have been no satisfactory systematic studies on which to base estimates of the population at risk, nor have the causal links been sufficiently well established to provide a basis for preventative measures or earlier therapeutic intervention. A major objective of the present research

was to determine whether the group referred for treatment were rare and atypical or whether they represented one end of a continuum of change in sexual responsiveness following childbirth. It seemed important to establish the frequency of changes in either a positive or negative direction in a general population, and to determine whether the sexual changes should be considered purely temporary or relatively permanent phenomena. A further aim was to establish predictive indices, so that those women likely to suffer serious negative shifts in sexual adjustment in the post-partum period could be identified at an early stage, and offered appropriate advice and counselling.

CHAPTER II

SEXUAL BEHAVIOUR

Modern Developments

There has been a considerable increase in our understanding of the physiological and behavioural components of human sexuality in recent years. Despite this upsurge of new knowledge, important gaps remain in our understanding of the female sexual response, especially in relation to reproduction. There has been a tendency to concentrate on those aspects of female sexuality which are of concern to men (Newton, 1973) and to pay less attention to other aspects of female sexual and reproductive behaviour.

The pioneering work of Kinsey and his co-workers in the 1940's established a sociological framework for subsequent investigations. Although early criticisms of Kinsey's data were largely based upon emotional responses to his attempt to quantify this most sensitive area of personal relationships, a more detached view indicates a number of weaknesses chiefly in the sampling and method of data collection and analysis. Like many subsequent researchers Kinsey relied heavily upon volunteer subjects and retrospective interview material. Volunteer respondents to sex research cannot be considered typical of the general population without considerable supportive evidence, and in Kinsey's case the evidence is largely in the opposite direction. Thus, although the sample is large, it contains serious biases in the variables of age, social class and educational level. Unconscious and conscious distortion of recall is inevitable in retrospective studies and poses particular problems in such a sensitive area as sexual behaviour, especially over a long time scale.

The data produced by Kinsey et al (1953) on female sexual response are difficult to interpret as they concentrated upon an incidence measure of orgasmic achievement. This indicates the percentage of women in a particular sub-group who have achieved orgasm under given circumstances. Kinsey et al believed that this was a more reliable method than frequency ratings based upon the rate of orgasmic achievement under particular circumstances. This emphasis means that the data are largely cast within a developmental framework which makes it difficult to establish the importance of fluctuations in sexual behaviour on an individual basis.

Other early studies have laid strong emphasis upon the frequency of orgasm during marital intercourse (Davis, 1929; Hamilton, 1929; and Terman, 1951). Hamilton questioned 100 married women who were in some way known to him. He noted that women with higher frequencies of marital orgasm were less likely to attract a diagnosis of psychoneurosis and tended to have intercourse more often in the first year of marriage. There was no relationship between sexual technique or earlier sexual experience and later orgasmic frequency. Terman's research grew out of an earlier study in which he found that 33% of wives reported themselves to be relatively inadequate with respect to the attainment of orgasm in sexual intercourse. He interviewed 556 wives from a "gifted group" and compared those who regularly achieved coital orgasm (44% of his sample), with those who did so rarely. He confirmed Hamilton's findings that wives with higher coital orgasm rates tend to have intercourse more frequently, though he also indicated that orgasmic inadequacy did not necessarily imply lack of interest in sex and speculated

that only a small proportion of the orgasmically inadequate women can be considered sexually "frigid".

This emphasis upon the frequency of coital orgasm by the female partner is, perhaps, not surprising in view of the commonly held belief that it is the most important single factor in determining sexual compatibility and marital happiness (Swieczkowski and Walker, 1978). However, Terman is more cautious;

"the wife's orgasmic adequacy is only one of many factors influencing her marital happiness, and by no means the most important factor; in this group it contributes only negligibly to the marital happiness of her husband".

The association between female sexual dysfunction and the absence of orgasm during sexual intercourse has gained currency by analogy with the situation in the male. Thus, Butler (1976) pointed to the widespread acceptance of the inability of a male to achieve orgasm following erection as pathological. However, she felt that this had led to a misunderstanding of the position of females who do not consistently reach orgasm in intercourse;

"In reality the relatively low frequency with which women actually experience orgasm in sexual relations needs to be understood as normal behaviour rather than being judged as abnormal by male standards".

Wallen and Clark (1963) found that 17% of women in their sample enjoyed intercourse, though they very rarely experienced orgasm. The sexual responses of 195 female subjects were investigated by Butler (1976); 73% of the women reported that it was not necessary for them to have an orgasm in order to enjoy sexual relations, and 39% reported that they could obtain relief of sexual tension without attaining orgasm. Despite their ability to obtain sexual

gratification without experiencing orgasm, 58% of the women in the study reported that they had pretended to have orgasms. Kinsey et al (1953) suggested that the ability of women to enjoy sex without orgasm may derive from the satisfaction that they find in contributing to the sexual pleasure of their partners.

Many of the findings from earlier studies were criticised by Butler (1976) on the grounds that;

"a lot of the data obtained in these investigations are too ambiguous or too value oriented for comparison purposes".

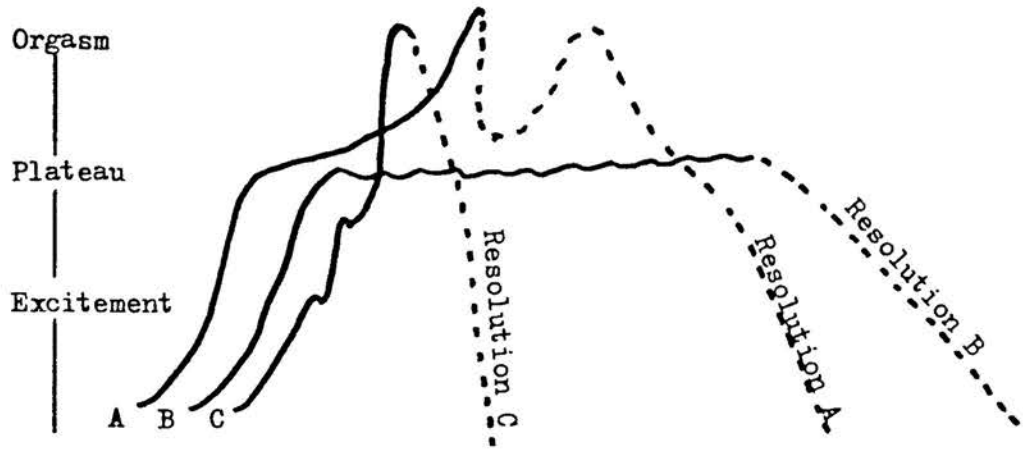
Despite these justified criticisms her own investigation is inadequate in a number of areas. Questionnaires were distributed via colleagues and friends to a variety of women, and a 25% response rate yielded the 195 subjects included in the study. Butler's assertion that this represents roughly the same population reached by Kinsey et al (1953) and Masters and Johnson (1966) fails to overcome the criticism of biased sampling of a volunteer population. The subjects were highly educated and of higher socio-economic status, and their religious affiliation was rather untypical of the general population (49% Jewish, 26% Roman Catholic, 19% Protestant). Only 38% of the subjects were married at the time they participated in the study, though 18% had been previously married. It is difficult to come to firm conclusions on the basis of Butler's study and similar work on the behavioural aspects of female orgasm and its relationship to sexual satisfaction and marital harmony. It seems reasonable to postulate that regular experience of orgasm during intercourse will reinforce investment in sexuality and strengthen the marital relationship. However, it seems unsafe

to rely too heavily on the presence or absence of orgasm in marriage, or even the rate of coital orgasm, as an index of sexual enjoyment and satisfaction.

Understanding of the physiological components of female sexuality was not greatly in advance of that described for the behavioural aspects until the mid 1960's. The investigations of Masters and Johnson (1966) mark an important landmark in the development of our understanding of the physiological components of female sexuality. Previous to their work it was conventional wisdom to distinguish two types of female orgasm, namely, clitoral and vaginal. This view owed much to psychoanalytic tradition which suggested that with increasing maturity there occurred a gradual shift in the focus of sexual sensation and pleasure from the clitoris to the vagina. Masters and Johnson's observations of over 300 women in a laboratory setting provided the first direct challenge to this traditional view. Their major contribution was to establish that female orgasm proceeds through a characteristic response cycle, irrespective of the type of sexual stimulation. Their description of a characteristic pattern of excitement phase, followed by plateau, orgasm and resolution, has been widely accepted, though Kaplan (1974) has proposed an alternative conceptualisation which divides the sexual response cycle into two phases of 'Lubrication - swelling' and 'Orgasm'. Three major variants of the response cycle were identified by Masters and Johnson and these are depicted graphically in Figure 1.

Figure 1

The Female Sexual Response Cycle



After Masters and Johnson (1966)

Variant A corresponds to the behavioural pattern of a steady rise in excitement to the plateau phase, followed by an orgasmic peak and a slow resolution phase in which further stimulation may result in additional orgasms, (multiple orgasm). The second pattern (variant B) corresponds to the situation where the woman remains at the plateau phase for an extended period, and enters a slow resolution phase without reaching an orgasmic peak. The third pattern (variant C) corresponds to a rapid rise in sexual excitement to an orgasmic peak with steep resolution phase. These three types of female orgasm have been classified by Bardwick (1971) as minimal, moderate and maximal. Clearly this does not exhaust the possible normal variants and individuals may regularly experience more than one variant depending upon the circumstances.

Sexual Dysfunction

Until the last decade problems of sexual inadequacy had received relatively little attention from researchers compared with problems of sexual orientation and deviation, such as homosexuality, paedophilia, transvestism and sado-masochism. This is surprising when we consider that many of the problems in the latter group, although distressing to the individual and occasionally troublesome to society, are comparatively rare. Sexual dysfunction on the other hand appears to be relatively common and is generally regarded as a major source of marital disharmony. However, normative data are scarce and estimates of the frequency of sexual problems in the general population have usually been made on the basis of the numbers of couples presenting for treatment of sexual problems.

A major difficulty in investigating female sexual inadequacy has been the lack of an agreed, empirically based, classification system. Traditionally, female sexual inadequacies were divided into non-consummation and frigidity (Friedman, 1962). Frigidity has generally been defined as the inability of the female to achieve orgasm during sexual intercourse, though Cooper (1970) has included reduced frequency of coital orgasm. This definition has proved far too global to be useful, and is equivalent in the field of male sexual disorders to a failure to distinguish between erectile and ejaculatory difficulties. The use of the term "frigidity" has decreased in recent years due to improved understanding of female sexuality and the realisation that the association of concepts of emotional coldness and hostility with inability to achieve orgasm was unwarranted and imposed an unfair burden of guilt upon

the female. Additionally, it seems illogical to base a definition of dysfunction upon inability to achieve orgasm during intercourse, when this may be a normal variant of female sexual response, (Kaplan, 1974). Confusion on this topic is understandable, nevertheless, in our society the achievement of a full orgasmic response in sexual intercourse has come to be seen as the "normal" pattern, and many couples will feel "inadequate" or "dysfunctional" if female orgasm is absent.

In a study of 100 well educated and happily married couples by a self-report questionnaire, Frank et al (1978) examined the prevalence of sexual dysfunction and what they refer to as "less pronounced sexual difficulties" where the couple were not seeking help for marital or sexual problems. They found a surprisingly high frequency of sexual dysfunction in the women with only 37% reporting no sexual dysfunctions, and arousal and orgasmic dysfunctions were almost equally common. Sexual difficulties, by which they mean complaints such as "partner chooses inconvenient time", "inability to relax", "disinterest", were even more frequently reported, with only 23% free of sexual difficulties. For the women in the sample, difficulty in getting excited was the dysfunction most strongly correlated with global ratings of sexual dissatisfaction. Difficulty in reaching orgasm, or inability to have an orgasm, was correlated less strongly.

In interpreting the importance of Frank et al's findings the major difficulty centres upon the volunteer nature of the population under study. Couples were recruited via a variety of organisations

and willingness to participate ranged from 5% in some groups to over 50% in others, and the higher socio-economic status and educational level of the sample renders it untypical of the general population. The sexual items of the questionnaire were embedded in more broadly based items about marital happiness, and it seems unlikely that a sexually dissatisfied group could have been "self selective". Willingness to admit to problems in the sexual area may be enhanced where the couple consider that they have a happy marriage and it is important to note that the presence of problems did not necessarily result in sexual dissatisfaction, as only 21% considered themselves to be sexually dissatisfied.

Levine and Yorst (1976) reported a study of black lower class women attending a university gynaecology clinic in which they distinguished between those who were "dysfunctional" and those who had "no orgasmic difficulty". Seventeen per cent of the sample reported that they had never experienced orgasm with a partner, and this was similar to the proportion who reported inability to have an orgasm in Frank et al's study. Approximately 24% of the sample in Levine and Yorst's study compared with 48% in Frank et al's study indicated that they experienced some difficulty in reaching orgasm. A comparison of these two studies with their very different samples, one being predominantly a white, higher socio-economic status volunteer group, and the other a predominantly black, lower socio-economic status group, selected on the basis of attendance at a gynaecology clinic, suggests that the frequency of sexual problems among "normal" couples may be much higher than has hitherto been believed. However, this picture is coloured by the reliance upon

achievement of orgasm in sexual intercourse as a key definitional concept, and this view has been seriously questioned.

As Baxter (1974) has indicated;

"the literature on female sexuality is diverse, much of it is impressionistic and it is often contradictory". He feels, "It can be separated into two major sub-divisions, as follows :

1) The influence of constant or temporarily distant factors on current (and assumed relatively stable) levels of functioning - this includes sociological studies, work on frigid women and studies of the influence of personality factors.

2) The influence of recent or concurrent new influences on changes of function - including the effects of psychiatric illness, contraception, hormonal changes and pregnancy".

The present study will be chiefly concerned with the factors contained in the second sub-division.

Measurement

The evaluation of stable levels of sexual functioning and temporary fluctuations in patterns of sexual behaviour depends crucially upon the development of adequate assessment measures. Unfortunately, most early scales of sexual behaviour have been lacking in objectivity, validity and reliability, (LoPiccolo and Steger, 1974). Sexual behaviour has been investigated by three main techniques, namely, interview, physiological measurement and psychological assessment.

Interview methods have found favour with researchers (Kinsey et al, 1953; Masters and Johnson, 1966) because they allow for the in-depth exploration of complex attitudes and feelings. Dennerstein et al (1977) have identified a number of major concerns about interview techniques. These include the type of interview (subtle as

opposed to direct approaches), the retrospective nature of the data with the possibility of systematic distortion and bias, interviewer bias, halo effects, semantic difficulties, lack of correspondence between verbal data and physiological events, the definition of parameters of sexual response for investigation and the method of quantifying the data. With such a catalogue of possible pitfalls, it is hardly surprising that the majority of recent workers have turned to more objective physiological or psychological methods whenever possible.

Physiological assessments have been carried out, usually under one of three conditions. During sleep (Karacan et al, 1970), during coitus or self-stimulation to orgasm (Masters and Johnson, 1966) and while the subject is attending to erotic material in the form of pictures or tape recordings (Heinman, 1975). In a review of the various measures used to assess sexual arousal, Zuckerman (1971) considered cardio-vascular measurements of heart-rate and blood pressure, respiratory-rate and depth, electro-dermal measures, pupillary response, urinary catecholamine levels and skin temperature measurements. He concluded that cardio-vascular and respiratory system changes occur mainly during late plateau and orgasmic phases and are not good measures of the sexual excitement phase. Other changes, such as electro-dermal fluctuations and pupillary responses are not specific to sexual arousal and may result from anxiety or emotional responses due to non-sexual stimuli. Efforts have been made to monitor sexual response patterns by attaching to the clitoris, either a thermister to measure temperature changes (Jovinovic, 1972), or a mercury strain gauge to measure engorgement (Karacan

et al, 1970). Both instruments provide measures of clitoral enlargement. Two other methods have been developed based upon the pioneering work of Masters and Johnson in the area of vaso-congestion during sexual arousal. The vaginal photoplethysmograph consists of a small cylinder that contains a photo cell and a light source which, when placed in the vagina, provides a measure of changes in vaginal pressure pulse and blood volume (Geer et al, 1974). A device for the measurement of vaginal blood flow by means of a small transducer attached to a diaphragm, which can be inserted like a contraceptive diaphragm, has been developed by Cohen and Shapiro (1970).

In their review of physiological measures McCauley and Ehrhardt (1976) conclude that these new methods give measures of arousal independent of self-report or subjective experience, which are more reliable than the more cumbersome clitoral guages. However, the link between objective measures of arousal and the emotional and behavioural concomitants of arousal is as yet imperfectly understood. Furthermore, the acceptability and applicability of these objective measures is likely to be confined to a small group of volunteers in a laboratory setting. although such measurements can provide important insights in our understanding of human sexual behaviour, caution is necessary due to biases resulting from volunteer participation and distortion due to the artificial setting in which the measurements occur. In view of these limitations, it is not surprising that the majority of researchers in the natural environment have chosen to use objective psychological assessments to supplement subjective interview data.

Psychological assessments of sexual behaviour can be roughly divided into three major categories, heterosexual experience scales, sexual attitude scales and sexual response scales. Scales of the heterosexual experience type list in a hierarchical manner different forms of sexual behaviour from kissing to intercourse and oral-genital experiences (Podell and Perkins, 1957; Brady and Levitt, 1965; Bentler, 1968; and Zuckerman, 1973). The Bentler scales were developed with a Guttman scaling technique and have been freely adapted by other workers. One of their most useful applications has been in the field of hierarchy formation for the systematic desensitisation of sexual anxieties. A major limitation of these scales is that they provide no information about current functioning and they are insensitive to the response fluctuations that can occur in all couples, including those with sexual problems.

Most of the general sexual attitude inventories which have been developed owe a debt to the work of Thorne (1966) who developed a 200 item questionnaire, designed to screen potential sex offenders. A number of scales, such as "neurotic conflict associated with sex" and "repression of sexuality", were produced by factor analysis, and these scales showed a high test - retest reliability over a three month period. Eysenck (1970) adapted Thorne's inventory by deleting, adding and rewriting items to produce a 98 item "Sexual Attitudes Inventory". Factor analysis of this inventory produced a number of factors which were similar to those obtained by Thorne. While these inventories appear to be potentially capable of sampling stable sexual attitudes, their relevance to sexual dysfunction and temporary changes in sexual functioning is unknown. Their standard-

isation is unacceptable, based as it is for the most part upon unmarried university students and many items would be likely to prove unacceptable to a general population, non-volunteer sample.

A number of tests have been devised for the measurement of heterosexual- homosexual orientation (Zamansky, 1956; Feldman et al, 1966). The sexual orientation method developed by Feldman et al relies upon the semantic differential technique and has been used to monitor changes in heterosexual and homosexual orientation during aversion therapy for transvestism and fetishism (Marks and Sartorius, 1968), and by Harbison et al (1974) to assess an individual's level of interest in a variety of sexual behaviours. These methods are all relatively demanding in terms of administration time and sample only limited areas of sexual functioning, so that their applicability to group research in the natural environment is relatively low.

A sexual response questionnaire based upon a visual analogue scale was developed by Cullberg et al (1969). This consisted of 7 scales, 90 mm in length with the labels "yes - always" and "no - never" at either end. Each scale was preceeded by a question, for example, "Do you achieve orgasm during coitus?" The questionnaire was used to assess changes in sexual behaviour before and after a 6 month clinical trial of an oral contraceptive pill. Dennerstein et al (1977) assessed the validity of the Cullberg scale on a small sample of Australian women. The women were asked to complete and discuss the scale and it seemed that questions relating to orgasm caused confusion. Questions were modified and added to develop a new visual analogue scale of 15 items with the intention of

measuring sexual desire and ability to respond. The questions covered aspects of sexual experience listed in Zuckerman's hetero-sexual experience scale (Zuckerman, 1973). The new scale was administered to three groups in an attempt to establish concurrent validity. The control group contained 54 women who claimed that they had no sexual problems, and were attending their General Practitioners for other medical conditions. As there appeared to be difficulty in obtaining "normal women", a few scales were also completed by female professional staff at the hospital. A sexually dysfunctional group comprised 126 patients referred for the treatment of sexual disorders. A treatment group was formed from 20 of the previous group who were administered the scale before and after successful therapy. Test - retest reliability coefficients reached acceptable levels on almost all items when the retest was administered within half an hour. With the exception of scales concerned with auto-erotic activity, there was good discrimination between the "normal" and the dysfunctional groups. Without further research, it is impossible to explain satisfactorily the finding on auto-erotic activity, though the authors suggest that it may be due to a combination of social taboos in both actual behaviour and recording. This type of scale appears to have considerable potential in that it is relatively easy and quick to administer, and is suitable for repeat administrations in daily or weekly diary keeping. It requires further standardisation on a large sample of the general population, and relevant selected populations.

A paper and pencil inventory, "The Sexual Interaction Inventory", has been developed by LoPiccolo and Steger (1974) with the aim of

measuring sexual functioning and sexual satisfaction within a relationship. Three basic principles were followed in developing the inventory. Firstly, the focus was on actual sexual behaviours performed by the couple and the enjoyment and satisfaction obtained from these behaviours, thus affording a direct measure of treatment outcome. Secondly, since there are no objective standards for "normal", "adequate", or, "functional" sexual behaviour, dysfunction was assessed in terms of a couple's satisfaction with themselves and with each other as sexual partners, rather than by comparing each partner separately to some arbitary external standard. Thirdly, items in the inventory were "obvious and direct" rather than "subtle and projective". The inventory consists of 17 heterosexual behaviours adapted from Bentler (1968) ranging from "the male seeing the female when she is nude" to "the male and female having intercourse with both of them having an orgasm (climax)".

For each behaviour both husband and wife answer six questions separately using a six-point scale with verbal labels. Responses from each partner are summed across all 17 behaviours and the totals used to derive an 11 scale profile. These 11 scales were chosen on the basis of clinical experience in treating dysfunctional couples. This experience indicated to the authors, that issues of dissatisfaction with frequency and range of sexual behaviours engaged in, self-acceptance, pleasure obtained from sexual activity, accurate knowledge of partner's preferred sexual activities and acceptance of partner, were all crucial in determining sexual satisfaction.

Four samples were assessed using the Sexual Interaction Inven-

tory. The first sample consisted of 28 couples who applied to the university clinic for treatment of sexual dysfunction. Samples 2 and 3 consisted of 70 and 78 couples respectively who responded to letters soliciting participation in the study. The response rate was approximately 25%. The fourth sample of 15 couples was obtained by advertising for subjects through notices placed on the university bulletin boards. The inventories were filled in at home and mailed back to the investigators. The subjects were generally young, well educated, recently married and with relatively few children. Test - retest reliability was investigated by administrations separated by a two-week interval. Although all correlations were significant at the 0.05 level, 5 of the 11 correlations produced were below 0.7 in absolute terms. The authors noted that couples frequently reported that detailed discussion of their sexual relationship had followed the first administration of the inventory, and this may have affected responses to the second administration. In order to assess validity the scale scores were correlated with the couple's simple self-report of sexual satisfaction. Although all the correlations were in the predicted directions none were significant at the 0.05 level, and the magnitude of the correlations was very low; the highest individual scale having a correlation of 0.34, and even the global scale derived from a pooling of other scales only achieved the modest value of 0.35.

Although the sexual interaction inventory appeared to be able to discriminate between dysfunctional couples seeking treatment and "normal" couples, when doubtful cases were excluded, it is difficult to agree with the authors' conclusion that their research has demon-

strated its good reliability and validity. It appears to be highly reactive to administration which makes it unsuitable as a change measure, and the volunteer population sampled seems to have been heavily biased on a number of important characteristics. The volunteer response rate of 25% was similar to that obtained by other workers (Kinsey et al, 1953; Masters and Johnson, 1966; Butler, 1976) this provides a rather depressing commentary, not only on the parlous state of our knowledge of normative aspects of sexual behaviour, but also on the instruments which might be used to establish such normative data.

Summary

The modern developments which have increased our understanding of female sexuality have been reviewed. It is notable that early work on sexual responsiveness placed overwhelming emphasis upon the importance of female orgasm during intercourse. With improved understanding of the physiological basis of female orgasm, due largely to the work of Masters and Johnson, there has been a shift towards the use of a wider spectrum of measures of female sexual responsiveness. The development of effective treatments for sexual dysfunction in the 1970's has led to improvements in the classification system, and renewed attempts to establish a normative base for sexual dysfunction and less severe forms of sexual difficulty. Unfortunately, although there have been rapid developments in the use of physiological measures of sexual arousal and responsiveness, progress in the development and refinement of more widely applicable psychological measures has been rather slow. At present we have no well standardised psychological assessment techniques available, which can measure temporary or

subtle shifts in sexual adjustment over a relatively short time scale.

CHAPTER III

PREGNANCY AND CHILDBIRTH

Studies of Sexual Behaviour

There have been remarkably few studies of sexual behaviour during pregnancy until recent times, Veylon (1974). It has been suggested by Butler and Wagner (1975) that the reasons for this relative neglect lie in social attitudes, mirrored in the medical world, which have tended to separate sexuality from pregnancy. They point out that the involvement of physicians in pregnancy and childbirth focused on the reduction of maternal and infant mortality, and uncomfortable questions about sex were kept in the background. As a result, respected text books of obstetrics and gynaecology published in the 1970's still make almost no reference to sexual activity during pregnancy, except to advise abstinence in the latter stages on the basis of rather flimsy medical evidence (Clark and Hale, 1974).

(i) Retrospective Investigations

The first systematic study of the effect of pregnancy upon sexual behaviour was carried out by Landis et al (1950) in the United States. They investigated 212 women, who had been pregnant for the first time, by means of postpartum retrospective questionnaires. Roughly 50% of the women indicated that their sexual desire had decreased during pregnancy, with levels of sexual interest falling steadily throughout the pregnancy. Although 27% of the women thought there had been an unfavourable effect on sexual desire during the first part of the pregnancy, 21% of those interviewed thought that there had been a favourable effect. The women who reported a

favourable effect had relatively poorer pre-pregnancy sexual adjustment. Insufficient data are given to establish the representativeness of the sample studied, but the use of retrospective measures requiring recall over a period of more than a year requires us to interpret the results cautiously. Unfortunately, this defect has not generally been overcome in subsequent studies.

Solberg et al (1973) interviewed 260 women immediately postpartum concerning their sexual activity during pregnancy. Only those having access to a sexual partner for at least 7 out of the 9 months of the pregnancy were included in the sample, and as a result 98% were married. The mean age was 26.2 years (SD = 4.4 years) and length of marriage ranged from less than 6 months to more than 10 years, with a median of 4.2 years. Obstetric history indicated that 35% were gravida 1, 34% gravida 2, and 32% gravida 3 or more. The median number of previous pregnancies was 2.4. There was a high level of education in the sample, with approximately 88% being High School or College graduates. The authors suggested that this probably reflected the exclusion of most of the out-of-wedlock pregnancies as well as the generally high educational level of the Seattle area.

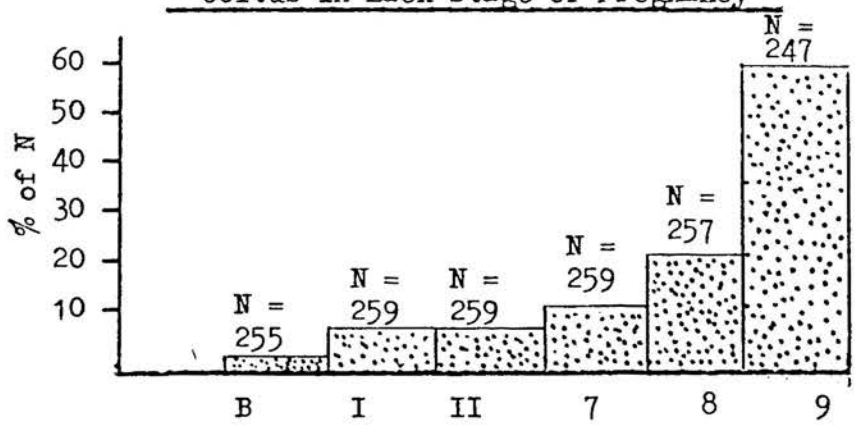
Interviews were conducted by male medical students in the maternity hospital on the 2nd or 3rd postpartum day. Although 15% of those asked refused to participate in the study, the authors indicated that this group did not differ significantly on age, racial background, or religious preference. The subjects in the study were predominantly white, and of Protestant or Catholic

religious affiliations. For the purposes of analysis the pregnancy was divided into five stages; first trimester, second trimester, seventh, eighth and ninth months and a baseline of one year before becoming pregnant. The frequency of coitus during the baseline was significantly related to the woman's age, with older women tending to be less active ($P < 0.001$), and also to the length of marriage, with activity tending to decrease with the duration of marriage ($P < 0.01$). Coital frequency at all stages was independent of race, religious preference, male or female educational level, negative feelings about being pregnant and whether or not the pregnancy was planned. There was also no significant association between coital frequency and number of previous pregnancies at any stage of the pregnancy.

The percentage of women abstaining from coitus remained low until the third trimester, whereupon there was a rapid rise in abstentions to a level of approximately 60% in the ninth month of the pregnancy. The detailed findings are shown in Figure 2.

Figure 2

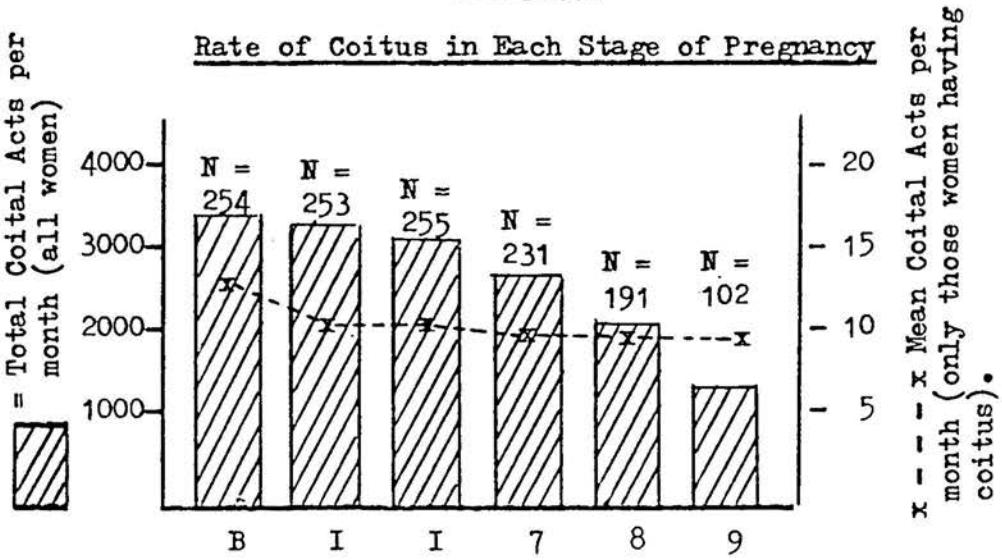
Total Number of Women Abstaining from Coitus in Each Stage of Pregnancy



From Solberg et al (1973)

There was also an almost linear decline in the frequency of sexual intercourse as the pregnancy progressed. Group data are presented in Figure 3.

Figure 3



(N Indicates the Number of Women Still Active in Coitus)

From Solberg et al (1973)

Unfortunately, pooled data of this type may hide a wide degree of individual variation and the authors reported that some women increased their sexual activity, and that the major influence was the woman's level of sexual interest during the pregnancy compared to her level before pregnancy. There was a steady decrease in the percentage of coital acts leading to orgasm and the ratings of orgasmic intensity also showed a steady decline. However, approximately 11% of women reported an increase in orgasmic intensity at all stages of the pregnancy. Of the orgasmic women, only 3% showed an increase in the frequency of multiple orgasm during the pregnancy, while 35% showed an unchanged frequency, and the remaining 62% showed a decrease. This finding reinforces the need for

caution in interpreting Masters and Johnson's (1966) findings (described on page 42) obtained from six intensively studied volunteers.

The major advantage of the Solberg et al study is that it provides quantifiable data on a large, apparently representative, sample of the population of a particular area of the United States. The important weakness is the retrospective nature of the investigation. The interviews were held at a highly emotional time (2 - 3 days after delivery) which casts considerable doubt on the accuracy of recall. Furthermore, the use of medical student interviewers, although they were given some unspecified training, suggests the need for caution in the interpretation of the subject's responses. It is doubtful whether medical students would have the experience required to overcome the distortions which can arise due to social expectancies, particularly when a woman is asked highly sensitive questions about her sexual behaviour by a young male interviewer.

The sexuality of pregnant and breast feeding women was studied by Kenny (1973) using retrospective questionnaires. A total of 45 questionnaires were distributed to women known to the author for return by post, and 33 women returned completed questionnaires. The mean age of the sample was 29 years, mean length of time married 7 years, with a mean number of 2.4 children. Data were presented on the three trimesters of pregnancy, a period of breast feeding and a period after weaning. Sexual functioning was operationally defined by 4 categories; desire, frequency, enjoyment and orgasm. Control variables were selected and dichotomies formed

so that at least 10 subjects fell into each group. Length of marriage was divided into 1 - 5 years, and 6 - 18 years. Women with one child were considered separately from those who had more than one. Physical state during pregnancy was split by combining "better" with "same" and "worse" with "variable". In the third trimester, a quarter of subjects reported an increase in the frequency of intercourse while a third reported a decrease. A similar pattern emerged for sexual desire, though for enjoyment and orgasm a majority of subjects (64% and 82% respectively) showed no change from pre-pregnancy levels. The majority of women felt "about the same" in each of the four categories in the second trimester, and the numbers who reported increased levels of functioning outnumbered those who reported reduced functioning in each category except orgasm. Presumably these comparisons relate to pre-pregnancy levels. There was more variation in the first trimester with approximately one half of subjects showing reduced desire, frequency and enjoyment, though half of the subjects reported that "orgasms" were about the same as when not pregnant.

Increases in the frequency of sexual intercourse during the first trimester were reported by 40% of the women who felt physically well during pregnancy, and by only 11% of those who felt worse. Decreases in the frequency of orgasms in the last trimester were reported by 40% of the younger married group and only 11% of the older married group. The author suggested that older married women were not as liable to let the last trimester interfere with their sexual functioning as the younger married women, and that this probably reflected greater sexual experience. Sexual functioning

did not appear to be affected by parity as there were no differences between primiparous and multiparous women. The results of this survey are difficult to interpret as we have no information about the biases inherent in the selection procedure, though the author does recommend improved sampling to permit adequate consideration of lower class women. Although the data are presented in quantified form, the basis of the analysis is not discussed. It appears impressionistic, and the author himself suggested that the questionnaire was in need of some revision.

The majority of studies have been conducted in the United States and although there have been a number of European studies there have, unfortunately, been no British ones. Three Czechoslovakian studies of the sexual life of women during pregnancy have been reported (Cernoch, 1961; Bartova et al, 1969; and Prochazka and Cernoch, 1970). In the earlier study, Cernoch had found that there were no substantial changes in sexual response in most women in the first half of pregnancy, though in the second half of pregnancy approximately one third of women reported an impairment of their sexual life. Only approximately 5% of women experienced an increase in sexual interest during the first half of pregnancy, and there was no improvement in women who suffered from a fear of pregnancy before becoming pregnant. Bartova et al (1969) carried out a retrospective interview of 500 women in the maternity ward following childbirth. General satisfaction with their sexual lives was expressed by 92% of women before pregnancy, though this fell to 77% in the first half of pregnancy, and 30% in the second half. Orgasm occurred in a majority of intercourses for 60% of women

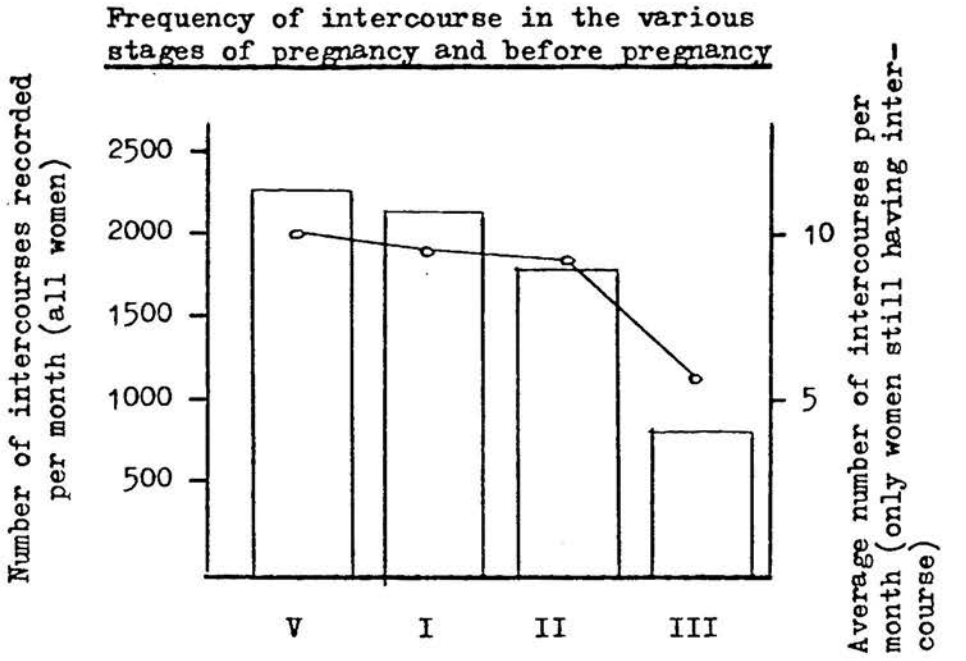
before pregnancy. The proportion fell to 45% in the first half of pregnancy and 17% in the second half of pregnancy. A small number of women (5%) reported experiencing an improvement in the quality of orgasm in the first half of pregnancy. The subjects who had unwanted pregnancies reported the lowest levels of sexual satisfaction before pregnancy and their levels of satisfaction fell more sharply during pregnancy. Prochazka and Cernoch (1970) investigated the opinions of women on sexual activity during pregnancy and the extent to which they followed health education advice. An 8 item questionnaire was administered to 200 women prior to leaving the maternity ward. The authors concluded that pregnant women were still not sufficiently well informed about the possible effects of intercourse on their pregnancy. Roughly 80% of the women felt that intercourse during pregnancy was harmless, though 35% had found it disagreeable. They suggested that the primiparous women were more interested in preserving their pregnancy, while the multiparous women who were generally older, were more interested in maintaining the sexual fidelity of their husbands. From the data presented, the subjects in these two large samples appear to be reasonably representative of the general population, and there were no systematic biases in the selection procedure. Insufficient data are presented to allow evaluation of the interview and questionnaire methods and the way in which the data has been quantified.

In a retrospective study of Swiss women, Pasini (1972) interviewed 100 women in the immediate postpartum period while they were in the maternity hospitals. He reported that sexual drive diminished progressively throughout pregnancy and he found no increase in

interest and activity during the second trimester. Pasini concluded that physical and psychological factors influenced the response with stable individuals showing the least deterioration in their sexual life. Positive attitudes to pregnancy led to an improved response, and those subjects with negative attitudes to their pregnancy showed a deterioration in their sexual response from the start of the pregnancy. He stresses the importance of the husband's attitude in that half of the husbands in the study had apparently reduced the frequency of intercourse, either on their own account or after discussion with the wife, presumably out of concern for her comfort and a desire to avoid harming the foetus. He commented that gynaecologists are generally ill-informed about sexual behaviour during pregnancy and fail to offer advice even though many pregnant women would welcome it. He found a significant correlation between the amount of information provided during pregnancy and the degree of sexual gratification. Unfortunately, insufficient information is presented to allow an evaluation of the representativeness of the sample, interview technique or general methodology.

In a study carried out in Germany, Lukesch (1976) interviewed 239 women in the immediate postpartum period about their sexual behaviour during pregnancy. The average age of the women was 24.5 years (SD = 5.5) and 93% were Roman Catholic. The average length of education was 10.3 years (SD = 2.1) and 48% of the sample were primigravidas, with the remainder being multigravidas. Lukesch found that sexual activity declined steadily during the pregnancy period and the details of sexual intercourse frequency are shown in Figure 4.

Figure 4



(V = pre-pregnancy; I, II, III = 1st, 2nd, 3rd Trimesters)

From Lukesch (1976)

Women who reported a high level of sexual activity before pregnancy and who showed a positive attitude towards their pregnancy, tended to be more sexually active throughout the pregnancy. Couples with a poor general relationship showed a greater decline in sexual activity and this factor seemed to be more important than the influence of physical symptoms during the pregnancy. It was also shown that relaxed behaviour during birth was positively correlated with a high coital frequency before and during pregnancy, and there was no relationship between coitus in late pregnancy and complications during the birth. The sample studied appears to be representative of the general population and there were no systematic biases in the selection procedure. The chief weakness in what is otherwise a well conducted study is the retrospective nature of the

information obtained.

(ii) Prospective Investigations

Masters and Johnson (1966) were able to collect interview data on 101 pregnant women, out of an initial 113 who were approached, during each of the three trimesters of pregnancy and in the third postpartum month. There were 43 primiparous women and 68 multiparous women in the sample. The average age of the women was 27 years 8 months and the average level of formal education was 2 years 3 months of college study. No other demographic information is available. The treatment of results is somewhat impressionistic and no quantifiable data are presented. During the first trimester 76% of the primiparous women reported reductions in sexual tension and effectiveness of sexual performance. Masters and Johnson point out that many of these women were contending with nausea and they were all affected by sleepiness and showed symptoms of chronic fatigue. In addition 60% of the women indicated that fears of harming the foetus had affected their freedom of sexual response during intercourse. The multiparous group noted very little change in their levels of sexual interest or effectiveness of performance during the first trimester, compared with their recollections of response levels in the three month period immediately prior to conception. The exceptions were seven women who suffered nausea and vomiting.

During the second trimester of pregnancy the majority of subjects reported a marked increase in eroticism and effectiveness of performance regardless of parity or age factors. Towards the

end of the second trimester 81% of the subjects described a significant improvement in their sexuality, not only over that recalled from the first trimester of pregnancy, but well beyond their previously established norms of performance in the non-pregnant state. Third trimester interviews were conducted approximately one month before the estimated date of confinement, and the primiparous group reported a significant reduction in coital frequency, compared to the second trimester. Masters and Johnson point to the possible effect of medical advice as sexual intercourse had been contraindicated for 31 of the 40 primiparous women who attained the third trimester of pregnancy. Although they admitted being strongly influenced by medical restrictions, 82% of the primiparous women reported that they gradually lost interest in sexual activity during the third trimester. Similar results were obtained for the multiparous women, though a slightly higher percentage continued to maintain their sexual interest. It is of interest to note that 20% of the subjects commented that their husbands had precipitated withdrawal from sexual activity as they found them less physically attractive in the later stages of pregnancy. They expressed concern that this lack of interest might be to some extent permanent.

A study of sexual adjustment in first pregnancy was carried out by Falicov (1973) on consecutive referrals to a private pre-natal clinic. Over a six-month period individuals who met the following criteria were requested to participate in the study: no history of previous miscarriages, abortions or gynaecological complications, present pregnancy planned, currently living with husband, no history

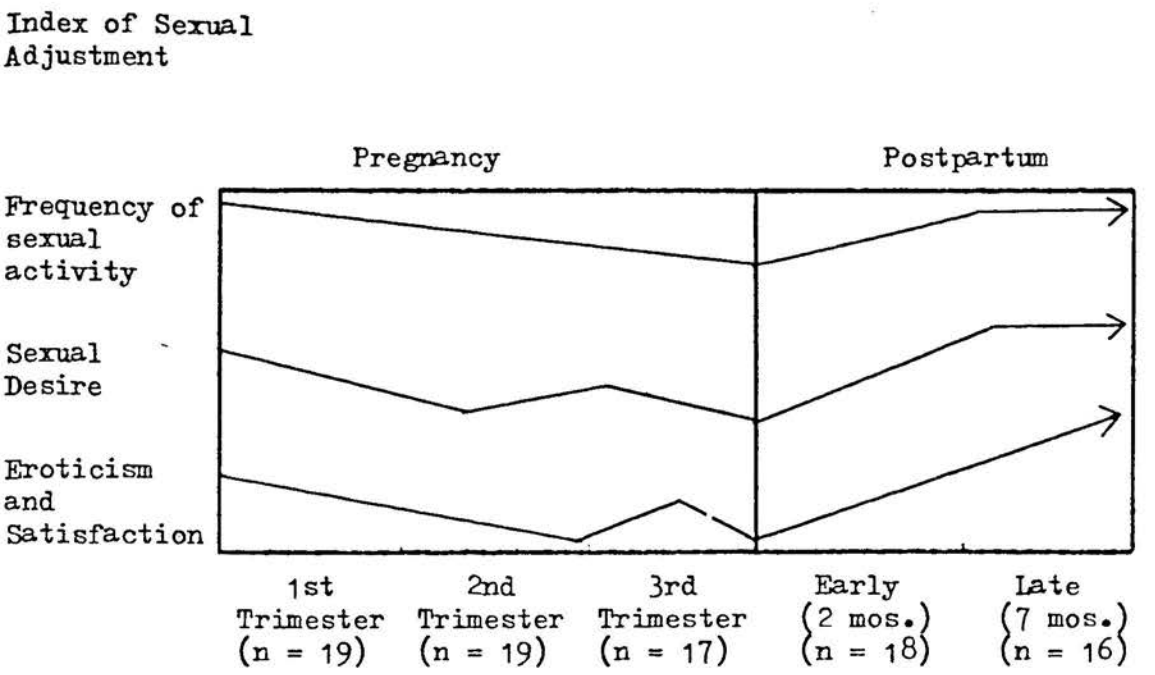
of psychiatric difficulty or chronic physical disability and white middle-class social stratum. Of the 30 individuals who were initially contacted, 22 agreed to participate in the study, and of these three women suffered miscarriages during the first or second trimester of pregnancy. One woman returned to her country of origin during the pregnancy and another respondent could not be given a third trimester interview because of an early delivery.

The subjects were interviewed by a female interviewer at five points in time: first trimester, second trimester, third trimester, immediately post delivery and at 6 - 8 weeks postpartum. A follow-up questionnaire was also mailed at 7 months postpartum and data was obtained on 16 respondents. A detailed interview schedule containing open-ended and structured questions was administered and the interviews were tape-recorded and verbatum transcripts made. At each point three aspects of sexual adjustment were taken into account; frequency of coitus, degree of sexual desire or interest and feelings of eroticism and sexual satisfaction.

The direction of change on these three indices is shown in Figure 5.

Figure 5

Direction of changes in Sexual Adjustment



From Falicov (1973)

In such a small group percentages are not meaningful and the major interest centres around the anecdotal evidence gained in the detailed interviews. By the end of the first trimester, 14 women had experienced a moderate or marked decrease in coital frequency, sexual desire and eroticism. Although four women initially experienced an increased sexual desire immediately after conception, they were following the downward trend by the end of the first trimester. Only one woman indicated increased feelings of sexual satisfaction during the first trimester. The factors most frequently mentioned to account for the decline in sexual activity were tiredness, sleepiness, heart-burn and nausea. The more severe these symptoms, the greater the decrease in sexual activities. Somatic changes

which directly affected sexual functioning were described by six women; these included changes in the sexual organs, such as the vagina feeling smaller which led to painful penetration, or a feeling of vaginal numbness which interfered with the experience of climax or orgasm. In three cases these changes appeared to be related to emotional tension during sexual intercourse.

In the second trimester coital frequency and sexual satisfaction were slightly increased relative to the first trimester, but continued below the pre-pregnancy levels. However, sexual desire remained at essentially the same diminished level as in the first trimester. Nausea, heart-burn and constipation had decreased considerably, but tiredness, breast tenderness and discomfort in the genital area continue to interfere with sexual readiness. Because of the changing shape of the abdomen, position habits had to be modified or movements restricted, and these adjustments frequently interfered with sexual satisfaction. The author concluded that, in general, sexual relations appeared to be somewhat improved when compared to the first trimester.

In the 7th and 8th months of pregnancy, seven women experienced fluctuations in sexual desire, varying between total disinterest and heightened desire surpassing their normal pre-pregnancy levels. In addition, half of the women who had experienced tension and decreased eroticism felt that sexual intercourse during the early part of the third trimester had become more relaxed and enjoyable in spite of their increased heaviness and clumsiness. Fear of harming the foetus was an influencing factor throughout the pregnancy,

though its effect declined in the third trimester. Nevertheless, most couples refrained from intercourse in the last two months of pregnancy in order to avoid the possibility of infection or premature delivery, though the reality of these dangers was sometimes questioned by the women. The subjects expressed a variety of attitudes towards the changes in sexual adjustment which had occurred during the pregnancy, ranging from intense frustration and resentment to a bland, almost indifferent, acceptance. Restrictions of sexual activity were accepted more readily in the first trimester, and later in pregnancy sexual behaviour gained increased importance as a vehicle for mutual affection rather than eroticism. It is interesting to note that four husbands found foetal movements disturbing during sexual activity and this may have inhibited their sexual initiative. Although this study throws up many interesting findings, the results can only be considered at an anecdotal level because of the very small number of women (17) on whom full data are presented, and the seriously flawed biases of the selection procedure.

In an Hungarian study by Bánki and Bánki (1973) a total of 708 women were investigated, of whom 174 were interviewed while pregnant, and 534 were asked retrospectively about previous pregnancies. In the group interviewed during pregnancy roughly a third indicated an increase in sexual activity and interest during the first two trimesters, though only 4% reported an increase in the third trimester. A decrease in sexual activity and interest was reported by 11% in the first trimester, 23% in the second trimester and 48% in the third trimester. Insufficient data are presented to

allow a comparison with other samples, though no systematic selection biases appear to have been operating. The data for the pregnant group appear to have been compiled entirely from interview material, though in a parallel study of sexual activity, depression and oral contraceptives, a group of 300 women were asked to keep an intercourse diary over three menstrual cycles.

In a briefly reported Polish study, Glenc (1973) presented information on 200 women observed throughout the duration of their pregnancy. He concluded that the intensity of sexual life was highest in the second trimester of pregnancy, and that sexual intercourse had no harmful effect on the course of pregnancy.

(iii) Cross-sectional Studies

A cross-sectional study of sexual behaviour during pregnancy was carried out by Tolor and DiGrazia (1976). Four different groups of women were used in the study and they were interviewed in the first trimester (Group A, N = 54), second trimester (Group B, N = 51), third trimester (Group C, N = 56) and at six weeks postpartum (Group PP, N = 55). Nearly all of the women (98%) were white, their average age was 27.6 (SD = 10.5), and they had completed an average of 13.6 years of education. Religious affiliation indicated that 53% were Catholic and 40% Protestant. All were married with the exception of one subject, and the mean number of pregnancies was 2.18. There wereno significant differences among the four subgroups on any demographic variables, except that there were more women in employment during the first trimester. Subjects were interviewed in the private practice establishments of local obstetricians

but no information is provided about recruitment or refusals. The subjects were administered a 10 item questionnaire which included questions about frequency of intercourse, frequency of orgasm and variety of actual and desired sexual practices, and also a 15 item "Attitude to Sex Scale" (Tolor et al, 1975).

There are, naturally, difficulties in comparing the responses from the four sub-groups, and the reader's task is not eased by the rather large number of complex tables which the authors have presented. In general, there seems to have been a decline in sexual interest, activity and satisfaction as the pregnancies progressed, though there is a large amount of individual variation. The most clear change was a reduction in the frequency of intercourse during the third trimester, during which period approximately one out of every three women reported total abstinence. In addition, women in the third trimester were generally less satisfied with their level of sexual activity than other groups. However, the frequency of multiple orgasm was significantly greater in the second and third trimesters compared with the first trimester group. There were no significant differences in the type of sexual stimulation preferred during the various trimesters of pregnancy, with breast, clitoral and vaginal stimulation all being given first preference by roughly 20% - 30% of women in each group. There were no changes in the frequencies of oral stimulation or masturbation compared with before pregnancy.

The authors concluded that liberal or conservative attitudes to sex were not related to sexual behaviour during pregnancy, but

they added the rider that this can only be assumed given the measurement instruments and methodology used in this study. In practice these two factors make it difficult to draw firm conclusions from the study. The two most interesting findings were that preferred techniques of sexual stimulation did not appear to change during pregnancy compared with before pregnancy, and that a substantial proportion of women (between 41% and 53%) selected "just to be held" rather than an alternative sexual behaviour when they did not desire sexual intercourse. This latter finding receives support from Hollender and McGehee (1974) who reported an increased desire for body contact and wish to be held during pregnancy, and they suggested that this may be correlated with the decline in sexual interest.

Morris (1975) obtained reports of day-by-day sexual activity for the previous week, from 900 Thai women, of whom approximately 13% were pregnant. This information was collected as part of a study of fertility during 1967 and 1968. A structured interview method was used, and the interviewers were trained, local nurses. A sub-sample of respondents were interviewed twice on selected variables to check interviewer accuracy, but no firm reliability indices were reported. Each woman was asked whether she had had sexual intercourse the day before the interview, the day before that, the day before that etc., going back to the same day of the previous week. The women were also asked whether their husband was in the home when no intercourse was reported for the week prior to the interview. No sexual information, apart from the occurrence of intercourse, was elicited. Intercourse frequency data were presented

for the same periods as those reported in the Solberg et al (1973) study, and the non-pregnant, non-menstruating group were included for comparison with Solberg et al's pre-pregnancy results. Although there was considerable individual variation among the women, there appeared to be a steady decline in frequency of sexual intercourse as the pregnancy progresses, with a more marked decline in the third trimester. By sampling only one week of sexual behaviour this study ran the risk of producing an artificially high number of zero responders, and this seems to have happened in practice. There is also doubt about how much weight can be attached to a simple measure of intercourse frequency since it has been suggested that this may be largely determined by the male partner (Kinsey et al, 1953). In addition, medical advice may play an important part in restricting frequency of sexual intercourse in the latter stages of pregnancy.

(iv) Physiological Investigations

The sexual responses of six pregnant women were studied by Masters and Johnson under laboratory conditions. They noted an increase in sexual tension in the second trimester which continued well into the third trimester, and they observed a greater degree of vaso-congestion in the pelvic organs and increased vaginal lubrication during the excitement phase of sexual arousal. They also found that the resolution phase differed from the non-pregnant state in that the vaso-congestion of the sex organs was not completely relieved by orgasm. During the course of the study two of the six women became multiorgasmic, the remaining four were already multi-orgasmic, and all six women described an increase in sexual drive. It has been suggested by Kyndely (1978) that this increase in

sexual drive may have been due to the lack of relief of pelvic vasocongestion after orgasm. However, it seems equally plausible to suggest that in this small volunteer group the highly unusual circumstances of the study may have been the most potent factor.

Orgasm and Labour

Although couples are often advised to discontinue sexual intercourse in the latter stages of pregnancy for fear of harming the foetus or bringing about premature labour, it has not been convincingly established that such risks in fact exist. Pugh and Fernandez (1953) examined 500 unselected patients admitted for delivery and asked about the date of their last intercourse. They concluded that coitus was not a factor in the production of puerperal infections, nor did it cause premature rupture of the membranes. There was a statistically significant difference in relation to premature labour, but the authors themselves cast doubt upon its validity. Of the 175 cases who exhibited complications which could conceivably have been related to coitus, only 47 reported having had intercourse within the 14 days prior to admission. The authors' conclusion is that;

"coitus is not responsible for the various complications of late pregnancy, delivery and the puerperium frequently attributed to it - Thus there is no necessity for the emphasis on abstinence during the final weeks of pregnancy".

The study of Solberg et al (1973) of 260 women lends support to the above conclusions. None of their subjects noted the immediate onset of labour following coitus or orgasm, and the birth weights, gestational ages at delivery and Apgar scores at 1 minute were all

independent of the frequency of coitus in the last trimester. However, it had been suggested by Goodlin et al (1971) that it is not the occurrence of sexual intercourse itself which may be related to premature labour, but the occurrence or orgasm (by whatever method the orgasm is produced), which is the crucial factor. Roughly 77% of the sample of 200 women reported that they had experienced orgasms during the second and third trimester. Although the data are presented in a rather confusing way, it appears that the incidence of orgasm after 32 weeks of pregnancy was significantly higher in a group of 50 women who had delivered prematurely (less than 37 weeks, new born weight under $5\frac{1}{2}$ lbs), compared with a matched group of 50 women who had delivered at term. Even for those who delivered at term it was claimed that orgasm sometimes caused painful uterine contractions and/or lower abdominal discomfort. A group of five women who claimed to be able to achieve orgasm in late pregnancy were asked to do so when the cervix was ripe in order to determine whether they could induce labour by this means. Four of the women achieved orgasm and two were in labour within three hours, and one within nine hours. The authors recommend orgasmic abstinence for women who display a ripe cervix at 32 weeks gestation or those with poor reproductive histories. However, in a letter responding to the Solberg et al (1973) study, Goodlin (1973) suggested that he may have over-estimated the importance of orgasm as a cause of premature labour in his earlier publications. Most of his patients were Chicanos and he feels that they tend to deny having orgasm during pregnancy for socio-cultural reasons. Clearly the issue has not yet been satisfactorily resolved.

A number of studies have suggested that a poor pre-pregnancy sexual adjustment may be associated with uterine inertia requiring an oxytocin drip and/or forceps assistance (Engstrom et al, 1964) and a total labour time of more than 6 hours (Almgren et al, 1972). This latter study also found that primiparous women whose sexual adjustment worsened in pregnancy were more likely to have a subsequent labour lasting for more than six hours. These studies used an overall concept of sexual adjustment without considering the occurrence of orgasm as a separate factor. Baxter (1972, 1974 a & b) interviewed a randomly selected group of married primiparous women, 13 weeks after delivery. In addition to interview material, objective data on their deliveries was obtained from hospital records. Of the 59 women who could be traced and whose Family Doctors had given permission, 54 were successfully interviewed. The women who had achieved orgasm during intercourse before pregnancy were compared with those who had not done so. Women who had not achieved coital orgasm before pregnancy had a significantly longer second stage of labour and were significantly more likely to have had their labour induced or helped by oxytocin drip and to have required forceps assistance. However, this appears to have been an "all or none effect" and there was no relationship between frequency of orgasm and length of the second stage. There was also a tendency for the non-orgasmic women to have longer first stages of labour with total labour lasting more than 24 hours. Women whose interest in intercourse increased at some stage during their pregnancy had significantly longer second stages of labour than those women whose interest decreased. The major difficulties in interpreting Baxter's findings are the small numbers of women involved (11 non-orgasmic,

37 orgasmic, 6 uncertain) and the large number of statistical comparisons undertaken. This factor, together with the post hoc analysis of variables not considered in the original hypotheses increases the likelihood of artifactual statistically significant results being obtained.

Despite the above reservations Baxter (1974 a & b) obtained some interesting findings which he was able to account for plausibly in terms of physiological and behavioural factors. Newton (1973) has indicated 11 points of similarity between female orgasm and childbirth in gross behavioural terms. The presence of uterine contractions during orgasm (Masters and Johnson, 1966) suggests that common mechanisms may underlie both responses and there is anecdotal evidence from Butler and Wagner (1975) of subjectively experienced similarities. Psychological factors, such as the ability to "let go", are also important in both orgasm and childbirth, and Kinsey et al (1953) have pointed out that there is a large learned element in female orgasmic achievement. Baxter (1974b) suggests that these learned abilities may transfer to the delivery situation.

Factors influencing Sexual Response

In the majority of the studies which have been reviewed above, authors commented that their samples showed a wide degree of individual variation in sexual response during pregnancy. If it eventually proves possible to elucidate characteristic patterns of change in sexual responsiveness during pregnancy and to link these with causative factors, it seems likely that these will only indicate generalised response patterns. The large number of

potentially influencing factors, such as physical state, anxiety and depression, personality variables, environmental factors, marital relationship, parity and previous level of sexual adjustment, to name only some of the more obvious ones, will render prediction hazardous. Anecdotal evidence suggests that women experience quite individual reactions to different pregnancies, and that this is not simply a matter of parity, but results from an interaction of the factors previously mentioned.

Bearing these reservations in mind, a number of conclusions can be drawn from previous studies. Two characteristic patterns have emerged: first, a steady and progressive decline in sexual functioning as pregnancy progresses; secondly, an initial decline in the first trimester followed by an improvement in sexual functioning (though not to pre-pregnancy levels) in the second trimester, followed by a more rapid decline in the third trimester. In general, two variables appear to be influencing these findings, namely, prospective versus retrospective investigation and nulliparous versus multiparous subjects. Studies which used retrospective methods and nulliparous subjects tended to find the steady decline pattern during pregnancy, whereas studies which used prospective methods and multiparous subjects tended to find the more complex second pattern. Interpretation is further complicated by the volunteer nature of some of the samples.

(i) Hormones

During pregnancy there are no cyclic hormonal fluctuations as there are during the normal menstrual cycle, and no manipulated

hormonal variations as are induced by birth control pills. However, rather dramatic hormonal changes do occur with marked increases in progesterone and oestrogen levels during pregnancy (McCauley and Ehrhardt, 1973). These authors concluded that the role of hormones in alterations of sexual functioning during pregnancy is difficult to assess, though they feel that the high levels of progesterone in interaction with numerous other physiological and psychological factors may lead to a reduction in libido. They recommend the use of day-by-day recordings of sexual feelings and various types of sexual behaviour, together with the collection of repeated endocrine measurements as a way of evaluating the role of hormones in sexual behaviour during pregnancy. It is easy to sympathise with this suggestion, though it seems rather impractical as it would presumably require a volunteer sample and the method of investigation itself could well be expected to produce distortions of sexual behaviour.

(ii) Anxiety and Depression

The role of anxiety and depression in lowering sexual interest and reducing sexual performance is well recognised in couples seeking treatment for sexual problems (Masters and Johnson, 1970). The evidence in relation to milder mood changes and anxiety in a "normal" population is less clear cut. In his study of "atypical" depression following childbirth, Pitt (1968) administered a questionnaire designed to measure maternal anxiety and depression to 366 patients at the antenatal clinic, of whom 305 had the questionnaire re-administered in the late puerperium. He found a highly significant tendency for questionnaire scores to drop by an average of

just under 3 points after delivery, and those women whose scores increased by more than 6 points were interviewed as potential depressives. The relevance of this research is that anxiety and depression scores appeared to increase in the pregnant sample, even though the vast majority of women could not be considered clinically depressed. Similarly, Meares et al (1972) found that a group of pregnant married women had higher neuroticism and anxiety scores than a group of women who were assessed in the immediate postpartum period. Neuroticism and anxiety were measured by the Eysenck Personality Inventory (Eysenck and Eysenck, 1964) and the Taylor Manifest Anxiety Scale (Taylor, 1953). The postpartum group obtained neuroticism scores which were close to those for Eysenck's normal sample and the authors suggested that the common belief that neuroticism is high in the puerperium and mental health unimpaired during pregnancy is erroneous, and that anxiety and neuroticism are characteristic of pregnancy while depression is characteristic of the postpartum period. In a study of 6,000 German students, most of whom were married, Giese and Schmidt (1968) found that increased neuroticism was associated with less frequent orgasm in the female subjects, though not with the frequency of intercourse. Eysenck's theory suggests that high N (neuroticism) scorers are characterised by a labile autonomic system and are thus susceptible to fear and anxiety to a degree which may make them less likely to indulge in sexual behaviour, Eysenck (1972).

Anxiety levels in pregnancy may be raised by a number of factors. The occurrence of nausea, vomiting and balance disturbances, expecially in the first trimester, may be an important factor, though it is

difficult to determine whether high anxiety results from experiencing unpleasant physiological sensations, whether the symptoms are in part caused by the continued state of anxiety, or whether both the actions are caused by a third factor, such as endocrine imbalance (Grimm and Venet, 1966).

The most common fears experienced during pregnancy concern the likelihood of producing an abnormal child and the possibilities of experiencing pain, injury or death by the mother. Heymans and Winter (1975) reported very similar results to a British study carried out by the Royal College of Midwives (1966). These studies showed that between 80% and 85% of women experienced anxieties during pregnancy and that roughly two thirds of these fears related to the infant, and the remaining third concerned the mother.

There is ample anecdotal evidence suggesting that physiological changes and anxieties during pregnancy influence sexual adjustment. There is a clear possibility that medical investigations which heighten anxiety and possibly cause discomfort may contribute to this deterioration. Advice and support, perhaps provided through the medium of childbirth and relaxation classes, may prevent or ameliorate this deterioration (Butler and Wagner, 1975).

(iii) Personal Development

The importance of pregnancy as a life event can scarcely be over-estimated. The woman experiences marked physiological, emotional, inter-personal and social changes especially in the case of a first pregnancy. These changes are likely to be mirrored by

attitudinal and behavioural changes in the husband and other family members. Social attitudes to the pregnant woman tend to be stereotyped and her treatment by medical and other authorities is liable to be regimented. The wider maturational and stress related aspects of these events are beyond the scope of the present investigation. However, within the narrower focus of sexual behaviour, anxiety factors, and perceptions of body image and bodily function play an important part. The way in which sexuality is dealt with during pregnancy will partly determine future sexual adjustment, particularly in relation to the woman's view of her own sexuality. The manner in which sexual aspects are handled and integrated with other changes will be an important influence on the future quality of the marital relationship.

Summary

A review of the available studies of sexual behaviour during pregnancy indicates that no single characteristic pattern of change in sexual response has been observed. There are some regularities in response pattern within which the impact of physical, emotional, social and environmental factors on individual variation can be understood. Unfortunately, none of the studies reaches acceptable methodological standards. Serious selection biases are evident in the prospective studies, and although the retrospective studies have generally used larger and more representative samples, the possibilities of distortion and retrospective falsification are considerably increased. There have been no reported studies on a British population. The relationship of orgasm to premature labour and other complications of pregnancy remains unclear. The role of

hormones, anxiety and depression, and personality variables in influencing sexual behaviour during pregnancy requires considerable clarification.

CHAPTER IV

THE POSTPARTUM PERIOD

Studies of Sexual Behaviour

There have been fewer studies of sexual behaviour following childbirth than sexual behaviour during pregnancy and the majority of combined studies have already been reviewed in the previous chapter.

(i) Early Postpartum Studies

In their retrospective study of 212 primiparous women Landis et al (1950) found a significant reduction in sexual desire following the birth of the baby. In a small number of cases, couples with a poor pre-pregnancy sexual adjustment improved after pregnancy, while some couples with a good pre-pregnancy sexual adjustment found that their adjustment deteriorated postpartum. The authors suggested that one reason for negative shifts might have been fear of having another child, and this could have been particularly important up to the third month postpartum, when the data were collected. Unfortunately, the use of postal questionnaires severely limited the exploration of the various factors and attitudes accompanying changes in sexual adjustment.

In their study of 101 women, Masters and Johnson (1966) found that approximately half of their sample described low or negligible levels of sexual interest and activity when interviewed early in the third postpartum month. Excessive fatigue, weakness, pain associated with attempted intercourse and vaginal discharge were typical reasons given for low levels of sexual interest. The

greatest area of concern was fear of permanent physical harm if intercourse was resumed too soon after delivery. A rapid return to pre-pregnancy levels of sexual interest was reported by most of the remainder, and a group of 24 women who were breast feeding reported significantly higher levels of sexual interest than in the non-pregnant state. This group reported that suckling frequently led to sexual stimulation to plateau tension levels and occasionally to orgasm. Guilt feelings were expressed by six of the group of 24 women who admitted being sexually stimulated by suckling, and all the group were anxious to make as rapid a return as possible to sexual activity with their husbands. Masters and Johnson suggested that this increased breast eroticism may lead a proportion of women to reject breast feeding because of the guilt or anxiety feelings which it engenders. In addition they noted that 11 women described increased sexual pleasure from a tender episiotomy scar or increased tightness of the vagina.

Although it represents the first prospective study in this area, Masters and Johnson's report contains a number of serious weaknesses. Problems associated with the composition of the sample, particularly its volunteer nature and low response rate, have already been mentioned. A more serious weakness in this context is the lack of any quantifiable data concerning the reported changes in sexual functioning. Reliance is placed on global and ill-defined statements, such as "increased sexual tension" and unfortunately no figures are given for frequency of intercourse or orgasm. It is of considerable interest that even in this sample about half of the women reported negligible sexual interest in the

third postpartum month. The differences in sexual functioning could not be related to age or parity.

Kenny (1973) investigated the sexual functioning; in terms of desire, frequency, enjoyment and orgasm, of 33 women who had breast fed their last child. The reported effect of childbirth on sexual desire is shown in Table I.

Table I

Effect of Childbirth on Sexual Desire

Change	N	%
More interested	10	30
No change	17	52
Less interested	6	18

After Kenny (1973)

Only 18% of the women felt that their sexual interest had declined as a result of childbirth, and the authors commented that childbirth itself was not seen as a major deterrent to postpartum sexual enjoyment. The basis of this assertion is not made clear. Written comments from subjects included a note that sexual experience was more likely than childbirth to cause greater interest in sex, and that problems in the marriage were more likely than a fear of childbirth to cause a decrease in sexual interest. We are not told

whether these comments were made by one or more than one individual. Multiparous women were much more likely to report an increase in their sexual desire following childbirth. Increases in sexual interest were reported by 43% of the multiparous women, and by only 8% of the primiparous women. The author concluded that age and experience were positively correlated with sexual functioning, so that, women who had been married longer with more children and more time breast feeding, generally reported an earlier return of sexual interest. None of the subjects reported a decrease in their sexual interest following weaning.

Although it provides some interesting contrasts with the study by Masters and Johnson of breast feeding women, this investigation contains a number of serious weaknesses. The sample were a highly selected group, in that they were all women known to the author, and they returned a retrospective questionnaire by post. The return rate was 73%. The analysis of sexual functioning into components of desire, frequency, enjoyment and orgasm seems a reasonable approach, but unfortunately no information is given about the definition of these concepts and the collection and analysis of data. The area of most concern is the time of data collection relative to childbirth and it is a pity that this is not stated. However, the author indicated that the mean age of the youngest child was 1.9 years, with a range of 2 months to 7 years. Presumably this means that some subjects were being asked to give information on a pregnancy and postpartum period which had occurred a matter of 2 or 3 months ago, while other subjects were recalling events up to 7 years earlier. The reliability of recall over such

a long period must be seriously questioned and the justification for averaging data from such a variable group of subjects is rather dubious. Even assuming reasonable accuracy of recall, it is difficult to see how subjects could be expected to give more than global responses after such a long period of time. Thus, the validity of the analysis of sexual functioning is questionable, and it is difficult to see how the effect of childbirth could be satisfactorily isolated from other changes which may have occurred in the subjects' lives.

In their cross-sectional study, Tolor and DiGrazia (1976) investigated a group of 55 women who were seen at the 6 week postpartum examination. The group had an average age of 25.4 years, they were almost entirely white (96%), married (98%), of Catholic (51%) or Protestant (40%) religious affiliation, with an average of 12.9 years of education. The average number of pregnancies was 1.9, and 60% of the subjects reported that their previous pregnancy had been planned. Only 7% of subjects were in some form of employment at the time of interview. Information on frequency of intercourse, orgasm, and the variety of actual and desired sexual practices engaged in, was obtained by interview and questionnaire methods. In the postpartum group, 35% reported that their desire for intercourse had increased compared with before pregnancy, while 25% reported a decrease with 38% remaining the same. Only 2% of women expressed a preference for less sexual intercourse, while 31% would have liked sexual intercourse more often. There were only the most minor changes reported in preference for sexual techniques and stimulation postpartum, compared with before

pregnancy. The authors noted that the modal orgasmic frequency showed a decline during pregnancy from the first two trimesters to the third, and had not returned to its initial level at 6 weeks postpartum. However, because of the cross-sectional nature of the study and the lack of published data, it is impossible to evaluate the significance of this claim. We are not told of possible differences in orgasmic frequency in the various groups prior to pregnancy.

The mean conservatism-liberalism scores for the following four identified sub-groups were compared :-

(i) women reporting that in relation to pre-pregnancy style they had an increased desire for intercourse versus those who had a decreased desire for intercourse;

(ii) women currently wishing sex more often versus those currently desiring sex less often;

(iii) women having intercourse more often than the median for the whole sample versus women reporting intercourse less than the median;

(iv) women who had orgasms at least 60% of the time versus those who experienced orgasms 40% of the time or less.

None of these comparisons yielded any significant differences and the authors concluded that there were no discernable behavioural correlations to the degree of conservatism or liberalism in sexual attitudes. Criticisms of the instruments and methodology used in the study have been made in the previous chapter. Comparisons of the postpartum group with the pregnant groups are rather difficult, as there are a number of differences between the samples, and insufficient data is presented about pre-pregnancy sexual functioning.

The only relevant British study has been reported by Baxter (1972, 1974a) in which he interviewed 54 primiparous women between 11 and 15 weeks postpartum. Subjects were selected from the Register of Births at a large London hospital and an attempt was made to include only women who had had a stable sexual relationship before conception. In this way 27 women were excluded who were either unmarried throughout the pregnancy or had obviously married during the pregnancy. This attempt was only partially successful. Of the remaining 70 women one was excluded because her hospital notes were missing and four because they had moved too far away. The general practitioners of the remaining 65 were asked for permission to visit the women and this was refused in four cases. Requests for participation in the study were sent to the remaining 61 women of whom two could not be traced, four refused to be interviewed and one terminated the interview after it had begun. In all, 54 women were interviewed, of whom 37 were married before conception and 17 had conceived pre-maritally. The average age of the sample was 22.9 years and almost half the sample (47.8%) had left school at 15 years of age. The average age of the husbands was 25.7 years and roughly half of the sample (46.4%) were manual workers. Although data are more or less complete on 51 subjects, this represents less than half of the original sample of women. However, the majority of the exclusions were on the basis of lack of stable pre-pregnancy sexual relationship or movement out of the area and there were relatively few (9) refusals to participate. Baxter (1972) concluded that a sample of this size cannot be truly representative of any population. Nevertheless, he felt that ;

"the present sample, especially the group who conceived post-maritally, will not differ greatly from the average urban married primiparous British woman".

The interviews took place between 11 and 15 weeks postpartum (12.8 weeks on average) and lasted approximately 1½ hours. The interview covered a variety of sociological, physical and psychological data about the pre-pregnancy, pregnancy and postpartum periods, of which changes in sexual functioning were only a small part. In addition an attempt was made to assess current psychiatric state. Changes in libido were measured in terms of changes in coital orgasm rate (the frequency of orgasm during intercourse) intercourse frequency and interest in intercourse. At the time of interview, four women had not yet resumed intercourse, and data are only presented on 48 of the remaining 50. The percentages of women reporting changes on the three measures of libido, together with the number responding are shown in Table II.

Table II

Changes in Libido following Childbirth

Measure	N	% increased	% no change	% decreased
Coital Orgasm Rate (COR)	48	33.3	37.5	29.2
Intercourse Frequency	54	16.6	33.3	50.0
Interest in Intercourse	51	37.2	27.5	35.3

From Baxter (1974a)

There was a significant relationship between changes in COR and changes in interest in intercourse, but there was no relationship between either of these measures and changes in the frequency of intercourse. Changes in COR failed to show a significant relationship with age of first intercourse, length of marriage or differences in menstrual history. There was also no relationship between change in COR and pregnancy variables such as vomiting, heartburn, toxaemia, unplanned pregnancy or change of interest in intercourse during pregnancy. The women whose COR increased postpartum had significantly longer second stages of labour than those women whose COR decreased. In addition, the women whose COR increased were more likely to have required forceps assistance during labour. The relationship with perineal tears or episiotomy could not be analysed because of the very small numbers involved. Women who had attempted breast feeding at any time after the birth were more likely to have decreased COR than those who had not, but there was no relationship with current breast feeding. Dyspareunia both at the time of interview and at the time of resumption of intercourse was significantly associated with a decrease in COR. Comparisons were made with subjective changes in vaginal tension and increased or decreased COR and there was a significant association between the subjective impression of the vagina as 'tighter' and decreased COR. The data in relation to psychiatric symptoms are rather unclear, though the author claimed there was a general tendency for a decrease in COR to be associated with the occurrence of more psychiatric symptoms. There was, however, a significant relationship between changes in interest in intercourse and psychiatric symptoms, with the group showing the highest number of psychiatric

symptoms more likely to have decreased interest in intercourse.

There are considerable difficulties in generalising from Baxter's study; the selection procedure clearly failed to operate satisfactorily in that an attempt was made to exclude women who had married during the pregnancy, though it was subsequently discovered that 17 of the subjects had conceived pre-maritally. The biases created by this fact are unknown. In addition the retrospective nature of the study and the long recall period involved makes it difficult to assess the reliability and validity of the measures used. The method of analysis, perhaps, gives rise to the greatest concern. Baxter analysed increases and decreases on his three libido measures against a large number of variables (70) for a rather small number of subjects (48 - 54). As the author himself pointed out this means that about 10 relationships, significant at the 5% level, would be expected by chance. In addition the very small number of subjects in some cells of the analysis makes it difficult to attribute psychological significance as opposed to purely statistical significance, and there is an increased risk that significant relationships will remain undetected. Despite these criticisms Baxter has provided the only published British study and in its conception, thoroughness, and attention to detail, it represents a considerable advance over most other studies.

(ii) Late Postpartum Studies

In her study of 19 women during their first pregnancy and the postpartum period, Falicov (1973) was able to report on sexual functioning at 2 months postpartum (19 subjects) and 7 months post-

partum (16 subjects). Information at the 7 months postpartum point was obtained by sending a postal questionnaire. An index of sexual adjustment was derived which incorporated three components : frequency of sexual activity, sexual desire and eroticism. (See Fig. 5, Chapter III).

In spite of high levels of sexual desire, a number of women expressed anxiety about the resumption of sexual activity following the birth, and at least seven women delayed resumption of intercourse for fear of soreness caused by the episiotomy. Falicov noted that six women seem to relive old fears that accompanied loss of virginity. At the time of the two-month postpartum interview, two-thirds of the couples had resumed sexual intercourse. Tension, fatigue, physical discomfort due to the engorgement of the breasts, or soreness of the episiotomy site, interfered with sexual functioning in half of those who had resumed intercourse. The remainder rapidly regained their pre-pregnancy level of sexual adjustment. The capacity for eroticism seemed to be somewhat higher than before pregnancy for five women, largely due to increased sensitivity of the breasts. Most of the women who had resumed intercourse reported that achievement of orgasm was more difficult than before pregnancy. Tension and fatigue caused by caring for the infant seemed to interfere with the ability to relax during intercourse. Some subjects expressed anxiety about changes in vaginal tension with increased tightness leading to painful intercourse, or slackness resulting in reduced sexual enjoyment for the husband. In those couples who had not resumed intercourse, the major reasons were tenderness of the episiotomy site, fatigue, or

lack of time or inclination.

The responses to the 7 months postpartum postal questionnaire indicated that sexual intercourse was still considerably less frequent than before pregnancy for ten couples. However, sexual desire and eroticism had returned to, or exceeded, pre-pregnancy levels, and nine women reported their capacity for arousal and orgasm to be increased. The major reasons given for the lower frequency of sexual intercourse at this time were fatigue and psychological tension. A sexuality index was derived, based on information collected at the first interview. This included frequency of intercourse, affective investment, importance attributed to sexual intercourse and orgasm in marriage, and attitude towards anticipated pre and post-childbirth sexual abstinence. Although women with high ratings on sexuality were less ambivalent or in conflict about sexual relations during pregnancy, the index did not appear to be related to the timing or level of resumption of postpartum sexual activity. The two most important factors appeared to be the woman's physical condition (fatigue, dyspareunia) and her husband's attitude towards the abstinence. Where the husband expressed eagerness an earlier resumption of intercourse was more likely. There was no relationship between the sexuality index and frequenoy of sexual intercourse in the later postpartum period, though some women who had high levels of sexual interest before pregnancy reported increased sexual desire.

Criticisms have already been made of the selection procedure which resulted in biased sampling for this study. It is clear

that the interview method resulted in a great deal of personalised material which was difficult to quantify. Perhaps the major weakness of the study is that judgements about sexual functioning were made in relation to pre-pregnancy levels at each interview point. Thus, the 7 month postpartum comparison relies upon recall over an 18 month period, and there must have been considerable scope for distortion due to the repeated detailed interviews. It is a great pity that the first interview did not establish a more objective, quantified base-line for pre-pregnancy functioning, against which measures of current functioning could have been compared at each interview point. The major advantage of this study is that by including a longer follow-up it suggests that reductions in the frequency of sexual intercourse may continue well beyond the early postpartum period, at least for primiparous women.

There have been a number of Swedish studies of the effect of pregnancy and childbirth on large, unselected samples of women. These studies have been chiefly concerned with the development of postpartum mental disorders and the information on sexual functioning represents only a minor aspect. Jacobson et al (1965, 1967) conducted large retrospective studies and the final series for the investigation consisted of 861 women. Questionnaires were sent to all women who had delivered at the University Department of Obstetrics and Gynaecology during the first half of the month that lay 3, 6, 9 or 12 months prior to the investigation. In this way a cross-sectional sample was assembled. Where the pregnancy had resulted in a still birth, or twins, the women were excluded from the study.

Jacobson et al (1965) reported on 404 women out of 430 to whom the questionnaire had been sent after initial exclusions (this represented a response rate of 94%). Changes in "sexual adaption" were reported for the total group and for 11% sexual adaption worsened, for 68% it remained unchanged, and for 21% it improved. Unfortunately, "sexual adaption" was not defined and data were not presented for the different groups, so it is not possible to make observations on temporal changes in the postpartum period, even within the limitations of a cross-sectional sample.

The report on the larger sample, Jacobson et al (1967), indicated that the high response rate (94.6%) was maintained. Roughly three-quarters of the subjects were below the age of 30, and 42% were gravida 1, 33% gravida 2, 16% gravida 3 with the remaining 9% gravida 4 - 9. Although most subjects were married, 8% were unmarried or divorced. It was predominantly an urban sample, with 84% of the sample living in towns or densely populated areas. The sample was fairly evenly distributed among the 4 data collection points, with 28% at 3 months, 26% at 6 months, 25% at 9 months and 21% at 12 months.

At the time of the questionnaire investigation, a total of 804 subjects (93.4%) reported having resumed sexual intercourse, and only 12% had not done so within the first three months postpartum. Only four subjects left this question unanswered. Details of changes in the frequency of pain during intercourse and sexual satisfaction are shown in Table III. Percentages are given as there appear to be different total numbers responding to the two questions.

Table III

Changes in Sexual Adaptation

Measure	Improved	Unchanged	Worsened
Pain in Coitus	7.2%	85.5%	7.3%
Sexual Satisfaction	19.8%	68.7%	11.5%

The timing of a resumption of intercourse was found to be significantly related to the return of menstruation. A similar relationship was found concerning breast feeding. Of those still breast feeding 85.7% had resumed intercourse as compared with 95.8% of the remainder. Women in whom menstruation had returned reported improved satisfaction significantly more frequently, as did women who were not breast feeding at the time of the investigation. Planned pregnancy showed a significant association with earlier resumption of intercourse, though no differences were found concerning sexual adaptation and satisfaction. Subjects with impaired genital involution reported greater variations regarding improvements as well as worsening of dyspareunia and other discomforts during coitus, compared with before pregnancy. The authors emphasised the value of gymnastic exercises during the puerperium aimed at aiding the involution of the abdominal and perineal muscles and restoring the tonicity of the tissues.

The major difficulty in interpreting the work of Jacobson and his colleagues concerns the large amount of data which is presented,

often in incomplete form. The most surprising omission is the lack of analysis over time with comparisons of the different groups. Insufficient data is given to evaluate the concept of "sexual adaptation" though it seems to be related to the presence of dyspareunia and a global measure of sexual satisfaction. The authors claimed that the sample was representative of the Swedish population as it included almost all the women who delivered in the area of study during the time in question.

A prospective study of unselected pregnant women from the same centre has been reported by Nilsson and Almgren (1968, 1970). A total of 152 women were investigated from the time of presentation at the ante-natal clinic to 6 months postpartum. As with other Swedish studies a vast amount of information was collected (650 variables in all) and the data on sexual adjustment only comprised a small segment. The concept of sexual adjustment was more clearly defined in this study ;

"it should be stressed that this (sexual adjustment) does not merely concern the woman's ability to reach orgasm, but rather her appreciation of her sexual life as a whole. Thus 'moderate' adjustment means that the woman did not regard her sexual life as entirely friction-free (viz. she could not always reach orgasm, her partner was too demanding sexually, she was unsure, she was afraid of pregnancy etc.), whilst 'poor' adjustment refers to those women who are more permanently frigid, find sex repulsive or regard it as a necessary evil".

Details of sexual adjustment in the year prior to the pregnancy under study, and changes in the postpartum period are shown in Table IV.

Table IV

Changes in Sexual Adjustment

Sexual adjustment prior to pregnancy	good 80 (52.6)	moderate 52 (34.2)	poor 20 (13.2)
Sexual satisfaction postpartum	better 18 (11.8)	equal 74 (48.7)	poorer 54 (35.5)

From Nilsson and Almgren (1968)

The postpartum figures exclude six women who had broken off their relationship or had not resumed intercourse. If these women are included in the "poorer" group, then the proportion reporting a deterioration in sexual adjustment postpartum rises to 40%. The authors believed that the interviews yielded reliable and valid data as information on sexual activity was collected towards the end of the interviews and questions were seen as appropriate by the subjects, because they were related to pregnancy, child birth, and the postpartum period. They suggested that there would be a tendency to under-report deteriorations in sexual adjustment and that their figures should be regarded as a minimum. If this is accurate it suggests that both the incidence and persistence of changes in sexual responsiveness postpartum are greater than has generally been assumed.

Factors Influencing Sexual Response

In attempting to assess the incidence and extent of changes in sexual responsiveness following childbirth, researchers have gen-

erally been forced to assume that pre-pregnancy levels represent "stable sexual functioning". It is recognised that this assumption may be unsound in the case of primiparous women, and attempts are usually made to exclude subjects who conceive pre-maritally. This is not always successful as in the study by Baxter (1972), where at least 31% of the sample selected for study appeared to have conceived pre-maritally. It also seems questionable whether "stable functioning" can be assumed for any other group, as both individual sexuality and the quality of a particular sexual relationship can be seen as changing, developing and deteriorating, due to a wide variety of different factors. Even though assumptions about "stable functioning" may be inappropriate, there is ample evidence from the studies reviewed above that women can monitor changes in their sexual responsiveness during pregnancy and the postpartum period, and that they frequently attribute changes to specific causes.

(i) Previous Sexual Interest

The level of sexual interest and investment in sexuality before pregnancy could reasonably be assumed to influence sexual responsiveness during pregnancy and the postpartum period. However, no clear relationship has emerged and Landis et al (1950) found that "poor" pregnancy sexual adjustment sometimes improved after the pregnancy, while "good" pre-pregnancy sexual adjustment sometimes deteriorated. Falicov (1973) found that women who were low in sexual responsiveness prior to pregnancy tended to maintain the same or lower levels of sexual adjustment during pregnancy. However, two women with low pre-pregnancy levels of sexual satisfaction seemed to improve slightly in the postpartum period.

The major component of change in the studies by Falicov (1973) and Baxter (1972) was frequency of intercourse and this may have produced a halo effect upon sexual adjustment ratings. While remembering that frequency of intercourse may be predominantly determined by the male (Kinsey et al, 1953), it seems possible that women with high investment in sexuality will have more frequent intercourse before pregnancy and will regard lower intercourse rates in the postpartum period as a deterioration in their sexual satisfaction. Conversely women with low investment in sexuality before pregnancy may regard a lower frequency of intercourse in the postpartum period, as more satisfactory, if it approximates more closely to their own preference. Alternative explanations will also be forced to reply upon the mediating effects of such factors, as increase or decrease in dyspareunia. Even though they may operate in a consistent fashion in relation to sexual satisfaction, these factors are likely to lead to considerable individual differences in actual behaviour.

(ii) Planned v Unplanned Pregnancy

Despite the large proportion of first pregnancies which are conceived pre-maritally, modern methods of birth control offer considerable improvements in family planning. Jacobson et al (1967) found that where a pregnancy had been planned, there was a significantly earlier resumption of sexual intercourse, though there were no differences in sexual adaptation and satisfaction. Adequacy of contraception in the postpartum period is also a potential factor influencing sexual behaviour (Landis et al, 1950; Falicov, 1973) as fear of a new pregnancy may be particularly strong

at this time.

(iii) Physiological Aspects

Even in the case of a planned pregnancy, the psychological and physiological changes which occur can be quite unexpected to the woman concerned. Negative responses are likely to be occasioned by the experience of nausea, tiredness, postural discomforts, changes in body image and role perception during pregnancy, and the subjective experience of labour and breast feeding. Landis et al (1950) found that women who experienced a higher frequency of health problems during pregnancy reported poorer sexual adjustment in the postpartum period. The role of labour has been most extensively studied by Baxter (1972, 1974 a & b) and his most interesting finding was that women whose coital orgasm rate increased postpartum had a significantly longer second stage of labour than those women whose COR decreased. Baxter (1974a) offered an explanation in terms of the supposed common physiological mechanisms which are assumed to underline orgasm and labour. He suggested ;

"that prolonged exposure to the violent pelvic activity of the second stage of labour will facilitate subsequent activity of these mechanisms in response to the stimulation of coitus".

However, he is unable to account for the reduced COR in women who experienced a relatively shorter second stage of labour.

(iv) Breast Feeding

Breast feeding is a potentially important factor in determining subsequent sexual adjustment. In the sample described by Masters and Johnson (1966) the breast feeding group reported higher levels of sexual interest, compared with before pregnancy. They

also described sexual stimulation associated with suckling. As Newton (1973) has pointed out lactation represents one of the three acts of inter-personal reproductive behaviour of which females are capable; the other two being coitus and parturition. He is able to demonstrate considerable similarities between lactation and coitus, and he has speculated that the inter-related pleasurable aspects of both behaviours are determined by their biological importance to the species. He has also suggested that there may be a relationship between accepting attitudes towards sexuality and breast feeding. On the basis of interviews with 700 mothers, Newson and Newson (1962) concluded that for many mothers, modesty and feelings of distaste account for their preference for artificial methods of breast feeding. Feelings of aversion towards breast feeding appear to be related to dislike of nudity and sexuality. Kenny (1973) in his study of breast feeding women found that multiparous women were more likely to report an increase in sexual interest. However, none of the subjects reported a decrease in their sexual interest after the termination of breast feeding. At 7 months postpartum Falicov (1973) reported that four of the six women who were still breast feeding felt heightened sexual desire and frustration at the infrequency of sexual relations.

European studies have tended not to confirm the findings of Masters and Johnson regarding the relationship between sexual responsiveness and breast feeding in the postpartum period. Baxter (1972, 1974a) found that women who had attempted breast feeding at any time, were significantly more likely to have a decreased coital orgasm rate than those who had not. This

relationship did not hold for those women who were still breast feeding at the time of interview (11 - 15 weeks postpartum). These results are similar to those obtained by Jacobson et al (1967). Baxter felt that the absence of a decrease in COR for the currently breast feeding group may have resulted from the small numbers involved. However, it seems possible that the finding may have arisen from a link between negative reactions to breast feeding and lower investment in sexuality (Newton, 1973). In the case of the American studies it seems likely that the women concerned were relatively successful at breast feeding, thus, perhaps, implying greater acceptance of their own sexuality.

An alternative relationship between breast feeding and sexual responsiveness has been suggested by Baxter (1974a), involving delayed resumption of menstruation. Until menstruation is resumed there is a reduced capacity for the production of vaginal secretion in response to sexual stimulation, and greater stimulation is necessary to achieve orgasm (Masters and Johnson, 1966). Thus, we could expect to observe a link between breast feeding, delayed return of menstruation and impaired sexual responsiveness in the puerperium. Jacobson et al (1967) found such an association in their study, where improved sexual satisfaction was reported significantly more often by women in whom menstruation had returned. At the time of the study 83% of those subjects who had not begun to menstruate were still breast feeding. Delayed menstruation was also associated with lower sexual satisfaction in those women who were not breast feeding at the time of the investigation.

(v) Genital Involution

The same authors also assessed genital involution by the following factors : duration of lochia (rubra and alba), the occurrence of occasional excessive haemorrhage or discharge during the first two months postpartum, and the time of resumption of menstruation. When the relationship between impaired involution and dyspareunia was examined, a complex picture emerged. Impaired genital involution was associated with both increased and decreased incidence of dyspareunia, compared with before pregnancy. However, there was no difference between the groups regarding the time of resumption of sexual intercourse, nor sexual satisfaction. There were symptoms of imperfectly regained abdominal muscular tonicity in 20% of the total series. Restorative exercises were routinely taught to patients attending the hospital, and 73% of subjects reported continuing these exercises for varying periods of time after leaving hospital. Impaired muscular tonicity occurred significantly more often in subjects who had failed to practise the prescribed exercises. Kegel (1952) states that, "many women fail to recover muscular tone after trauma of childbirth". He regards this loss of muscle tone as a major factor in complaints of loss of sexual responsiveness following childbirth. Improvements in sensory perception of the vagina via muscle exercises, were first noted in women undergoing treatment for urinary stress incontinence, or genital relaxation. A number of these women reported experiencing orgasms for the first time following treatment, and Kegel was able to demonstrate improvements in sensory perception of the vagina in a series of 64 parous women, in whom the function of the pubococcygeus muscle was restored by an exercise programme.

(vi) Hormones

The role of hormones in determining female sexual behaviour is difficult to assess. McCauley and Ehrhardt (1976) have provided a thorough and detailed review of hormonal and behavioural interactions. During pregnancy there are no cyclic hormonal fluctuations as in the normal menstrual cycle. There are, however, marked increases in progesterone and oestrogen levels during pregnancy. After delivery progesterone levels drop rapidly over the first few postpartum days. This leads to renewed adrenal cortical function and altered steroid production. Normal ovarian sex hormone production is not re-established until between 4 and 6 weeks after delivery. It is in the area of the relationship of these hormonal changes to actual sexual behaviour that the greatest uncertainty lies. McCauley and Ehrhardt concluded that;

"it may well be that hormones interact with other situational variables in such a way as to sometimes enhance sexual behaviour, while at other times, or for other women, the hormonal-environmental interaction may lead to a supression of sexual responsivity. Furthermore sexual activity may trigger alterations in hormone levels, just as hormones may activate behaviour changes".

The rapid drop in progesterone levels following delivery has been thought to contribute to postpartum depression. If such a relationship were established it would suggest a possible indirect link with changes in sexual responsiveness. Nott et al (1976) investigated the relationship between hormonal changes and mood in a group of 27 pregnant women who were assessed three times before delivery, and 16 times in the 6 weeks following delivery. Initial interviews established base-lines for personality and other personal variables, and on each occasion blood was taken and three measures

of clinical status and mood were completed. Subjects were assigned to two groups on the basis of scores on the Pitt Depression Questionnaire (Pitt, 1968). The "peak" group consisted of 13 patients whose maximum score occurred within the first 10 postpartum days, and the remaining 14 patients constituted a "non-peak" group. Progesterone, total oestrogen, luteinizing hormone and follicle-stimulating hormone levels were compared for both groups. There was an absence of consistent differences between the groups in hormone levels, the rate of change of hormone level and in the ratio of one hormone to another. There was no evidence that hormones were related to mood in the puerperium, though hormone changes were correlated weakly with specific symptoms, e.g. sleep disturbance and weeping. The authors drew attention to a number of quite serious methodological difficulties which they encountered, chiefly the limitation of the number of blood samples which can be obtained. Clearly research in this area requires improved techniques, more sophisticated methodology and inter-disciplinary collaboration.

(vii) Depression

Loss of sexual interest in severe cases of depressive illness is well attested clinically (Beck, 1967). However, the incidence of puerperal psychosis is usually reported as between 1 and 1.5 per thousand births (Grundy and Roberts, 1975). The effect of mild depression on sexual behaviour is much less clear and Beck (1967) states that;

"there is generally a loss of spontaneous sexual desire and responsiveness to sexual stimuli. In some cases, however, sex desire seems to be heightened when the patient is mildly depressed".

The short lived mood disturbance which has been observed so frequently in the first few postpartum days has been designated "the Blues" and regarded as a normal phenomenon (Pitt, 1968). In his survey of 305 women Pitt found that roughly 11% of women, followed through to the late puerperium, were diagnosed as suffering from puerperal depression. The depression usually began in hospital and was distinguished from "the Blues", reported by 50% of the sample, by its longer duration. After the return home the main features of the depression were irritability, despondency, feelings of inadequacy and inability to cope with the baby. There was increased lability of mood and diurnal variation with greater distress in the evenings. Guilt feelings were associated with self-reproach over not loving or caring enough for the baby. Only five of the 33 depressed women were known to be receiving treatment for their symptoms at the time of the study; treatment was being provided by General Practitioners in four cases, while the fifth subject attended a psychiatric hospital. Follow-up questionnaires were returned by 28 subjects one year after the post-natal assessment. In 16 cases there appeared to have been a full recovery, but the remainder seemed to have made little or no improvement. They described symptoms such as loss of sexual and other interests, irritability, fatigue and ready depression. There were no significant relationships between depression and demographic factors, psychiatric history, physical or hormonal problems.

(viii) Anxiety

Anxiety invariably accompanies depressed mood in the puerperium

and frequently centres on concern for the baby. The mothers' fears usually appear unjustified to the outside observer. Although depression during pregnancy is not predictive of postpartum depression (Dalton, 1971), a relationship between severe anxiety during pregnancy and postpartum depression has been suggested by the work of Tod (1964) and Meares et al (1976). In this latter study high scores on the neuroticism scale of the Eysenck Personality Inventory (EPI), obtained during pregnancy, showed a significant association with later postpartum depression. Similar findings were reported by Pitt (1968) who found that high neuroticism scores and low extraversion scores on the Maudsley Personality Inventory short form (an earlier version of the EPI) showed a significant relationship with postpartum depression. Unfortunately, we have no way of knowing whether the scores obtained reliably indicate previous personality or rather reflect current depression. Coppen and Metcalfe (1965) showed that patients assessed before and after depressive illness showed a significant decrease in their neuroticism scores and a significant increase in their extraversion scores, following treatment.

(ix) Personality

There is a dearth of studies linking personality variables, other than neuroticism and extraversion, to sexual behaviour in general, and sexual behaviour in pregnancy and the postpartum period in particular. Kinsey et al (1953) found a significant relationship between strength of religious feelings and sexual behaviour and attitudes. Differences between religious groups and denominations are less clearly established, though Peterson (1975) concluded

that Protestants were the most permissive sexually, with the Jewish group in the middle, and the Catholic group the least permissive. However, Pasini and Charbonnier (1974) found that women with a strict Protestant religious background were more likely to show significant decreases in sexual activity during the second and third trimesters of pregnancy. Tolor and DiGrazia (1976) reported the absence of a correlation between religious affiliation and liberal versus conservative attitudes towards sex. They also found no relationship between conservatism and changes in sexual behaviour during pregnancy and the postpartum period. Unfortunately, several criticisms can be addressed to their study and further research is required to resolve this issue.

(x) Social Aspects

Social and environmental factors have been little investigated in relation to sexual behaviour in the postpartum period. This is rather surprising as the birth of a baby, particularly a first child, generally heralds important role changes for each member of the family, and there are likely to be implications for family finances, housing and social life. Preoccupation with the needs of the infant may cause a deterioration in other relationships, and tension and fatigue associated with caring for the baby may lead to a deterioration in sexual adjustment (Falicov, 1973). There is evidence that the overall quality of marriage is related to the level of female sexual satisfaction, and that unhappy marriages generally show lower rates of female orgasm (Gebhard, 1966). In the study of sexual responsiveness in the first five years of marriage Clark and Wallen (1965) found that decreasing responsiveness

tended to be associated with negative marriages, whereas increasing responsiveness was associated with marriages judged to be positive in quality. A significant relationship was found between sexual enjoyment and co-operative marriage relationships by Rainwater (1966). Couples who shared a range of activities and interests were much more likely to report high levels of sexual enjoyment. Subjects in Kenny's (1973) study of breast feeding women commented that marital problems were a likely cause of deterioration in sexual interest following childbirth.

(xi) Age, Parity and Length of Marriage

Most of the studies reviewed above failed to show any relationship between age, parity, or length of time married and postpartum sexual adjustment. The exception was the study by Kenny (1973) in which he found that multiparous women were more likely to report increases in sexual desire following childbirth, and that older women who had been married longer generally reported an earlier return of sexual interest. Although greater attention has been paid to those women who show a decrease in sexual responsiveness following childbirth, positive aspects should not be neglected. Falicov (1973) suggested that;

"for many women motherhood may represent a supreme test and proof of one's womanhood, bringing a fuller and more mature acceptance of one's femininity".

Several of her subjects commented that pregnancy aided in shedding timidity in relation to bodily functions, increased marital intimacy, and prompted some abandonment of "girlishness". Following childbirth, Falicov feels that these changes may lead to a greater and less inhibited capacity for sexual arousal and satisfaction.

Summary

There have been relatively few studies of postpartum sexual behaviour. Samples have tended to be small and highly selected and although larger more representative studies have been carried out in Sweden, sexual adjustment has not been the major focus of the research. The length of follow-up has typically been about three months, though two studies report systematic data at approximately six months postpartum.

Positive and negative changes in sexual adjustment have been reported for quite sizeable proportions of the samples studied. The magnitude of change is more difficult to assess, though clearly it varies from mild to profound in individual cases. A wide variety of potential change agents have been suggested and these include attitudinal, physical, emotional, social and environmental factors.

CHAPTER V

THE PILOT STUDY

The broad aims of the Pilot Study were to survey changes in sexual behaviour, attitudes and interest in a group of women who had given birth approximately one year earlier. It was necessary to establish the extent to which both positive and negative changes in sexual adjustment following childbirth were of long-term or permanent duration, rather than purely temporary phenomena. Assessment at one year after childbirth was decided upon because it seemed reasonable to assume that changes existing one year after childbirth would be relatively permanent, and recall over the two year period involved would remain reasonably reliable. As the Pilot Study was entirely retrospective the most important factor was to establish the existence of the phenomenon which could then be more systematically investigated by means of a prospective study. The second major purpose of the Pilot Study was to establish the acceptability, reliability and face validity of the structured interview method and the various questionnaires employed in the survey.

Hypotheses

A large number of very interesting and speculative hypotheses could have been established on the basis of the studies reviewed in the preceding chapters. However, the retrospective method employed, and the absence of firm, uncontradictory findings in the literature indicated that hypotheses should act as sign-posts for the development of hypotheses in the main study.

The following hypotheses were developed for the Pilot Study :

Hypothesis 1

A higher frequency of health problems during pregnancy would be associated with poorer sexual adjustment postpartum.

Hypothesis 2

Emotional disturbances, depression and higher neuroticism scores would be associated with poorer sexual adjustment in the postpartum period.

Hypothesis 3

The mother's perception of her baby as easier or more difficult than average would be related to her postpartum sexual adjustment, since it was assumed that greater tension and fatigue would be generated by a difficult baby.

Hypothesis 4

Problems associated with labour, genital involution, return of menstruation, breast feeding and distortion of genital anatomy would be related to poorer sexual adjustment postpartum.

Hypothesis 5

A decline in the frequency of sexual activity and satisfaction postpartum would be associated with poor sex/pregnancy information and unplanned pregnancy.

Hypothesis 6

The quality of the physical environment (type of accommodation) would be related to postpartum sexual adjustment in so far as it increased problems of adjustment to the baby.

Method

It was decided to interview a group of 50 women who had given birth to a first or second baby approximately one year prior to the date of the interview. Three General Practices were approached to provide the names and addresses of suitable subjects. Unfortunately, although the original research protocol was accepted by all three practices, one practice subsequently expressed reservations about two of the questionnaires (the Sex Inventory and the Sexual Attitudes Questionnaire). It was not possible to allay the fears of these G.P.'s and, therefore, patients obtained from this practice could not be included in the study. This reduced the number of subjects to 25, and may well have unbalanced the study from the stand-point of social class.

The 25 subjects were each sent a letter describing the research project and asking for their co-operation; together with an introductory letter from their own general practitioner, and a form giving the proposed time for the interview with a stamped addressed envelope for the reply. Replies were received from 23 women, of whom 20 agreed to participate in the study and three refused. One letter was returned unopened marked "gone away" and no reply was received in the other case, despite a follow-up letter being sent. All interviews took place in the subject's own home at a date and

time convenient to them, and the interviews were of approximately 45 minutes duration.

Demographic and other information relating to the recent pregnancy were collected by means of a standardised interview, and the subjects then completed five short questionnaires. The questionnaires will be described briefly in the order in which they were completed by the subjects. The short form of the Maudsley Personality Inventory (Eysenck, 1958) has been shown to measure the two factors of extraversion and neuroticism with good reliability and a high correlation with full scale scores in both normal and psychiatric patients, using only six questions in each scale (McGuire et al, 1963). The Health in Pregnancy Questionnaire (Wolkind, 1974) was derived from the Health in Pregnancy Interview (Grimm and Venet, 1966) and contains 21 items related to the most commonly occurring health symptoms during pregnancy.

The Baby Questionnaire (Breen, 1975) is composed of six items on which the mother is asked to rate first for the "average" baby, and then for her "own" baby. Each item is rated on a 5 point scale and a total score is obtained by taking the difference between the summed ratings for the "average" baby and the summed ratings for "own" baby. A positive or negative discrepancy indicates the mother's perception of her own baby's health and adjustment.

The Sex Inventory, developed for this study, contained 18 items describing sexual behaviour and attitudes and subjects were asked to indicate on a 5 point scale, the extent and direction of

of any changes which might have occurred, when comparing the three months immediately prior to the interview with the three months before they became pregnant. A total score, indicating the overall shift in sexual responsiveness, was obtained by summing the scores on the positive and negative rated items.

A Sexual Attitudes Questionnaire was constructed from a questionnaire described by Eysenck (1970), which he based upon the work of Thorne (1966). The 98 item questionnaire was reduced to 36 items on the basis of clinical judgement in relation to relevance, acceptability with the population to be studied, and statistical analysis. The factor analysis of the original 98 item questionnaire carried out by Eysenck (1970), and an item analysis of questionnaire returns on 100 male subjects, formed the basis of the statistical analysis. The data on male subjects were provided by Whalley (1974). The SAQ was designed to provide attitude scores on six scales which were tentatively named as follows : Sexual Satisfaction (SAQA), Sexual Excitement (SAQB), Sexual Nervousness (SAQC), Sexual Curiosity (SAQD), Prudishness (SAQE), and Censorship (SAQF).

Results

The general level of co-operation was extremely high and there were no difficulties in interviewing any of the subjects. The questionnaires were broadly acceptable in presentation and content, though a small number of ambiguities were noted for future reference. Almost all participants expressed interest and approval of research in this area.

The mean age of the subjects was 27 years (SD 3.4) and the mean age of the husbands was 28 years (SD 4.4). The sample was evenly divided between women with first babies (10) and women with second babies (10). The social class distribution of the sample is shown in Table V.

Table V

Social Class Distribution

Social Class	I	II	III	IV	V
n	3	4	12	1	0

The majority of subjects (12) were drawn from social class III and social classes I and II were well represented, though there was an almost total absence of subjects in social class IV and V.

Emotional disturbance following the birth was reported by one half of the subjects (10) and four subjects had been treated for depression by their general practitioners, though none had been treated by a psychiatrist.

The mean scores and standard deviations on the MPI, PHQ and BQ are given in Table VI together with the results obtained by Eysenck, Wolkind and Breen, respectively.

Table VI

Mean Scores on Questionnaires compared with Published Norms

Scales	This Study			Norms			Differences		
	n	$\bar{x}$	S.D.	n	$\bar{x}$	S.D.	t	df.	p
MPI Neuroticism	20	6.85	3.16	400	6.15	3.42	0.96	418	n.s.
MPI Extraversion	20	5.90	2.84	400	7.96	2.98	3.16	418	.005
HPQ	20	5.45	3.20	118	7.85	3.54	3.05	136	.005
BQ	20	1.85	4.44	51	1.16	3.19	0.63	69	n.s.

Two of the four scales showed significant differences between the present sample and the published norms. Eysenck obtained higher extraversion scores, however, his sample consisted of male and female students and was thus rather different from the present homogeneous sample. The results obtained by Wolkind on the HPQ indicated a somewhat higher frequency of symptoms, though this is not surprising since Wolkind's data were collected at the antenatal clinic during pregnancy, whereas the present data were collected one year after pregnancy. The present results indicated a slightly more positive perception of the baby by the mothers compared with Breen's sample, but the difference was not statistically significant. Breen's group were interviewed at 2 - 3 months postpartum and were composed entirely of primiparas and both factors might tend to produce less positive scores.

Overall changes in sexual adjustment were assessed by reference to the total score on the Sex Inventory. On the SI the mean for all subjects was 1.95 with an SD of 12.33, this indicates a small positive change overall. The number of subjects and the percentages in the increased, unchanged and decreased categories of sexual adjustment and other important individual items are given in Table VII.

Table VII

Numbers of women showing changes in postpartum sexual behaviour

		Increased	Unchanged	Decreased
Sexual Adjustment (SI Score)	n	11	3	6
	%	55	15	30
Frequency of intercourse	n	9	4	7
	%	45	20	35
Orgasm in intercourse	n	7	8	5
	%	35	40	25
Satisfaction with sex	n	9	7	4
	%	45	35	20
Preferred frequency of intercourse	n	9	7	4
	%	45	35	20
Pain or discomfort	n	3	14	3
	%	15	70	15

A principal components factor analysis with varimax rotation was carried out using the Factor Program of the Statistical Package for the Social Sciences (SPSS) (Nie et al, 1970). Five factors were identified and named as follows (with the figures in brackets indicating the percentage of common variance accounted for by the

factor): Sexual Interest (33.5%), Distaste (22.6%), Difficulty in Responding (12.0%), Sexual Enjoyment (23.8%), and Pain or Discomfort (9.2%). Individual subject scores were calculated for each of these scales and used in the subsequent statistical analysis in addition to the total SI score. Scale scores were obtained from the SAQ and coefficients of reliability were calculated using the Kuder-Richardson formula with Horst's modification as follows : Sexual Satisfaction ($r = 0.91$); Sexual Excitement ($r = 0.43$); Sexual Nervousness ($r = 0.90$); Sexual Curiosity ($r = 0.86$); Prudishness ($r = 0.85$) and Censorship ($r = 0.72$). The statistical analysis was carried out using the SPSS Breakdown Program (Analysis of variance).

With the exception of Hypothesis 3 all the hypotheses of the study received at least partial confirmation. This may have been due to the generally positive perceptions of their babies by women in this study, and also because tension and fatigue associated with caring for the new baby were relatively temporary phenomenona which did not produce any long term adverse effects upon sexual adjustment. The changes in the structure of family and social relationships caused by the arrival of a new baby are likely to be more enduring and may affect the couple's sexual adjustment, though this would not necessarily be made worse by the temporary problems associated with a more difficult baby. It was intended that these effects be assessed at approximately three months postpartum in the main study.

Health problems in pregnancy were reported more commonly by

mothers of second babies and mothers who sought treatment for depression tended to report more health problems during their pregnancy. These health problems seemed to have a general sensitising effect in that there was increased sexual nervousness, later resumption of sexual intercourse and the women were less likely to carry out post-natal restorative exercises. Practising these exercises seemed to have a number of beneficial effects upon sexual adjustment which included increased enjoyment and interest in sex and reduced discomfort when intercourse was resumed. Other physical factors which operated to delay the resumption of sexual activity and to decrease sexual interest and responsiveness were the continuation of vaginal discharge, delayed return of menstruation and changes in vaginal tension. Although breast feeding did not appear to have the effect of either increasing or decreasing eroticism as reported in other studies it was associated with earlier resumption of sexual activity, less sexual nervousness and reduced pain and discomfort.

The extent of emotional disturbance following parturition was rather surprising, 50% of subjects reported some degree of temporary disturbance. However, mild and temporary emotional upsets appeared to have had no significant effect upon sexual adjustment, although in 20% of subjects who had received treatment for depression from their general practitioner there was a significant adverse effect upon sexual satisfaction and responsiveness despite the fact that treatment had been successfully concluded some months earlier. A more detailed study of the effect of both mild and more

severe depressive episodes upon sexual adjustment was planned for the main study.

Few women regarded their pregnancies as unplanned, though there was a tendency for unplanned pregnancy to be associated with negative change in sexual adjustment. Contraceptive adequacy prior to pregnancy was more strongly linked to postpartum sexual adjustment; with women whose precautions were judged more adequate showing greater sexual responsiveness and less sexual nervousness postpartum. Contraceptive adequacy at the time of interview was associated with improved sexual adjustment and less emotional disturbance.

The fact that the adequacy of the physical environment, in particular, the spaciousness of the accommodation occupied, was related to both sexual adjustment and emotional disturbance suggests that negative factors in the physical environment may interact with factors in the marital relationship and social situation to produce adverse changes.

Discussion of Results and Conclusions

The two broad aims of the Pilot Study appeared to have been achieved satisfactorily. The study confirmed that changes in sexual responsiveness following childbirth were quite common and relatively long-lasting. However, a somewhat surprising finding was that the numbers of women who experienced a positive shift in sexual adjustment were consistently greater than the numbers who experienced a negative shift on all the indices of sexual responsiveness which

were used. This relationship only applied when the severity of the shift was ignored; a more detailed analysis showed that extreme positive shifts were rare while extreme cases account for almost half of all the negative shifts. This led to the conlcusion that the distribution of shifts in sexual adjustment following childbirth was uneven, with between 35% and 55% of subjects showing mild positive shifts and between 10% and 15% showing severe negative shifts with the remainder either unchanged or experiencing mild negative changes.

A further complicating factor was the higher frequency of positive changes in the group who were experiencing their second pregnancy; negative shifts were more common with first pregnancies. A number of possible explanations could account for this finding. It might be argued that disruption of marital and social relationships is less following the birth of a second child, and the more experienced mother will experience less anxiety and tension in the early months following the birth. Consequently, multiparous women would be able to respond more readily and develop more emotional investment in the sexual relationship. Another interesting speculation concerning this finding, which could only be checked with a well controlled longitudinal study, was that improved sexual adjustment following the birth of the second child may simply be a compensation for the decrement brought about by the first pregnancy. Thus, the second pregnancy would have the effect of returning the woman towards her original baseline of sexual adjustment. A further possibility concerns the current norm of family size in this country. The birth of a second child

often signals the achievement of a complete family unit and the effective separation of sexuality from reproduction. Thus, provided reliable contraceptive measures are used, the woman is freed of anxiety concerning further pregnancies and is able to re-evaluate her attitude to her own sexuality; away from its reproductive functions and towards mutual pleasuring and emotional bonding within the marriage.

The second major purpose of the study was to establish the acceptability and reliability of the structured interview and questionnaire measures. All the questionnaires were well received by the subjects in terms of clarity and acceptability in the sensitive area of sexual relations. Where it was possible to conduct statistical tests of reliability, the findings were very encouraging and the scales derived from the Sex Inventory by factor analytic methods corresponded well with a priori assumptions about the components of sexuality which might be related to changes in sexual adjustment. The three major components identified were sexual interest, sexual enjoyment and distaste for sexual activities, with sexual nervousness and physical discomfort accounting for smaller proportions of the common variance.

The considerable overlap apparent in the fields sampled by the Sex Inventory and the Sexual Attitudes Questionnaire raised doubts about the meaningfulness of distinctions drawn between sexual behaviour and sexual attitudes. A majority of items in the Sexual Attitudes Questionnaire were concerned with behaviour, and there was no evidence that the remaining items made a significant additional

contribution. Although pre-existing attitudes may well play an important part in determining later behaviour, it was impossible to untangle the interactions in this retrospective analysis. In view of these findings the value of using the Sexual Attitudes Questionnaire in the main study was seriously questioned. This point was reinforced by the need to incorporate a questionnaire designed to measure patterns of marital interaction, an area which had been neglected in the Pilot Study. In view of the limited time available for interview and questionnaire completion, it was felt that the Sexual Attitudes Questionnaire should be eliminated from the main study.

The high response rate and the positive reaction to the research area were hopeful signs for the recruitment of subjects and the maintenance of contact during the prospective study. Unfortunately, no data were available on the subjects who refused to participate in the Pilot Study, though it was hoped that analysis of the characteristics of drop-outs from the main study might throw some light on this aspect.

CHAPTER VI

AIMS, DESIGN AND HYPOTHESES OF THE MAIN STUDY

Aims

The two major unresolved questions regarding sexual behaviour, pregnancy and childbirth are the nature and importance of changes in sexual behaviour during pregnancy, and the prevalence of long-term changes in sexual adjustment following childbirth. The use of small, highly selected samples and retrospective investigation bedevils research in this area. Where small, highly selected samples have been studied during pregnancy and the immediate post-partum period, contradictory results have generally emerged. There are obvious difficulties in interpreting the results of large scale retrospective studies, especially where the investigation of sexual behaviour has played only a minor part.

There exists a clear need for a large scale, well controlled, longitudinal study of changes in sexual behaviour during pregnancy and following childbirth on a representative sample of the British population. The general aim of this study was to make a contribution in this direction. The first specific aim of the study was to investigate the patterns of change in sexual behaviour which occur during pregnancy in the British population. The second aim of the study was to establish the frequency, nature and permanence of changes in sexual adjustment following pregnancy. The third aim was to identify possible causal factors in changes in sexual adjustment and establish predictors which would allow for early identification of individuals liable to experience adverse changes.

Design

The difficulties inherent in mounting a truly prospective study in this area are formidable. Indeed, to a certain extent the twin aims of obtaining an unselected sample and carrying out a prospective study are mutually contradictory. It would be possible to select a geographical area and advertise for volunteers who expected to become pregnant within a six month period, but clearly this would lead to unacceptable biasing of the sample. Volunteers would inevitably constitute a special group and the important element of the unplanned pregnancy would be excluded from the study. There would also be considerable wasted effort in interviewing individuals who subsequently did not become pregnant, and the drop-out rate over the greatly extended period of the study would be likely to be very high, due to social mobility and other factors. The alternative approach is to recruit an unselected sample of pregnant women as early as possible during their pregnancy. This allows assessment of sexual behaviour in the immediate pre-pregnancy period to be made when recall is still good and before the confounding factors of pregnancy and childbirth have had an opportunity to distort judgements. This approach was selected for the main study.

It was decided to divide the study into three phases, namely ante-natal assessment, postpartum assessment and follow-up. It was planned to establish levels of sexual behaviour prior to pregnancy at the ante-natal interviews which were held between 18 to 32 weeks pregnant depending on the timing of the first ante-natal appointment. Changes in sexual behaviour during pregnancy were to be monitored at

the first interview and at the postpartum assessment 6 - 8 weeks after the birth. Changes in sexual adjustment following childbirth were to be assessed at the follow-up interview 9 - 12 months after the birth.

The investigation was to be essentially psychological in character and concerned primarily with the objective measurement of behaviour, and subjective assessment of the experience of pregnancy, childbirth and the postpartum period. Thus, the instruments to be used comprised structured interviews and questionnaires. In addition to direct questioning about changes in behaviour the questionnaires were designed to permit more objective assessment. It was not considered appropriate to include the measurement of physical parameters such as hormonal assays in the study, though attempts were made to incorporate some information about physical factors, concentrating mainly on the subjective experience of the women concerned.

Hypotheses

In view of contradictory findings from previous studies, it seemed highly unlikely that a single characteristic pattern of sexual behaviour during pregnancy would be observed. However, it was expected that a number of pattern-types would be identified. Multiparous women were expected to show little change in their levels of sexual interest and activity during the first two trimesters, though some might experience increased enjoyment and orgasmic intensity. Primiparous women were expected to show a decrease in sexual interest and activity during the first trimester

though this might recover during the second trimester. A general decline in sexual interest and activity was expected in both groups during the third trimester.

Women with a high investment in sexuality, prior to pregnancy, were expected to experience fewer and milder adverse changes in their sexual adjustment during pregnancy. Moral and social attitudes might be associated with a decline in interest and activity during pregnancy. In general, a poor sexual adjustment before pregnancy was expected to increase the likelihood of adverse changes during pregnancy.

Although medical opinion and advice to pregnant women varies enormously, there appears to be no evidence that normal sexual behaviour during pregnancy is harmful to mother or foetus at any stage. The suggestion of Goodlin et al (1971) that orgasm in late pregnancy may be associated with increased risk of prematurity has not been fairly investigated. At present this remains an open question. Where a couple's anxiety level is raised by medical advice or investigations during pregnancy, this might be expected to lead to a decrease in sexual activity and responsiveness.

Estimates of the frequency of changes in sexual responsiveness in different samples vary widely, though it seems to depend largely upon the aspects of sexual behaviour which are assessed. At three months postpartum between a third and a half of cases appear to have experienced a reduction in interest and responsiveness on a variety of measures, and between a quarter and a third

appear to have increased their interest or responsiveness. The stability of changes in sexual responsiveness following childbirth has not been established over an extended period. The pilot study reported in Chapter V indicated that between 35% and 55% of subjects might be expected to show mild positive shifts in sexual adjustment, and between 10% and 15% might be expected to experience severe negative shifts, with the remaining 30% to 50% either unchanged or experiencing mild negative changes. It would also be expected from the pilot study that the frequency of positive changes would be higher in multiparous women, while negative changes would be more common in the case of primiparous women.

A number of factors might be expected to contribute to changes in sexual responsiveness following childbirth, and they can be clustered into four major categories. The first category concerns pre-existing patterns of sexual behaviour and attitudes, including the level of sexual adjustment pre-pregnancy and subsequent changes in sexual adjustment during pregnancy. The second category concerns emotional factors, in particular stress created by health problems during pregnancy and the postpartum period, depression, difficulties in coping with the baby, and fears of a further pregnancy. The third category derives from factors which are broadly physical in origin, but which may also have a significant psychological component. Factors in this category are the experience of labour and childbirth, breast feeding, changes in vaginal tension and dyspareunia. The fourth category is largely concerned with social and environmental factors such as the type of accom-

occupied, unplanned pregnancy, changes in the general marital relationship and social life, and the quality of advice and support provided by professional staff, friends and relatives. There is considerable interaction between these various factors, and a large element of overlap between the four categories.

Specific Hypotheses

(i) Pregnancy

Hypothesis 1. There would be a general decline in sexual interest and activity during the third trimester.

Hypothesis 2. That primiparous women would show a decline in sexual interest and activity during the first trimester which would tend to recover during the second trimester.

Hypothesis 3. That multiparous women would show little change in their levels of sexual interest and activity during the first two trimesters, and that some might experience increased enjoyment and orgasmic intensity.

Hypothesis 4. Poor sexual adjustment before pregnancy would be associated with adverse changes in sexual adjustment during pregnancy.

Hypothesis 5. Anxiety, especially over harm to the foetus, would be associated with poor sexual adjustment during pregnancy.

Hypothesis 6. Health problems during pregnancy would be associated with poor sexual adjustment.

(ii) Postpartum

A. Pre-existing Attitudes and Behaviour

Hypothesis 1. Women with low investment in sexuality and poor pre-pregnancy sexual adjustment would be more likely to experience a deterioration in sexual adjustment postpartum.

Hypothesis 2. Adverse changes in sexual adjustment during pregnancy would be associated with deterioration in sexual adjustment postpartum.

B. Emotional Factors

Hypothesis 1. Anxiety during pregnancy and the postpartum period would be associated with deteriorations in sexual adjustment. Anxiety might be generated by health problems and medical investigations during pregnancy and the postpartum period, difficulties in coping with the baby, and concern to avoid a further pregnancy.

Hypothesis 2. Depression in the postpartum period would be associated with deteriorations in sexual adjustment.

C. Physical Factors

Hypothesis 1. Perceptions of labour and childbirth as painful or unpleasant would be associated with deterioration in sexual adjustment postpartum.

Hypothesis 2. Successful breast feeding would be associated with stable or improved sexual adjustment postpartum.

Hypothesis 3. Changes in vaginal tension, increased dyspareunia and failure to practise post-natal exercises would be associated with deteriorations in sexual adjustment postpartum.

D. Social and Environmental Factors

Hypothesis 1. Inadequacies in the physical environment, particularly in the accommodation occupied, would be associated with deteriorations in sexual adjustment postpartum.

Hypothesis 2. Unplanned pregnancy would be associated with deteriorations in sexual adjustment postpartum.

Hypothesis 3. Adverse changes in the general marital relationship would be associated with deteriorations in sexual adjustment.

Hypothesis 4. Severe restrictions on social life, extending into the late postpartum period, would be associated with deteriorations in sexual adjustment.

Hypothesis 5. The absence of appropriate advice and support from professional staff, relatives or friends, would be associated with deteriorations in sexual adjustment postpartum.

CHAPTER VII

METHOD

Selection of Subjects

The investigation of a naturally occurring phenomenon such as pregnancy within a medical setting poses considerable logistical problems. The pattern of ante-natal care within the city of Edinburgh is rather complex, and this made for difficulties in obtaining a representative sample. The maternity unit at the Western General Hospital seemed to offer the best prospect. The unit operated with two Consultant Obstetricians, each holding separate ante-natal clinics on one day per week. The geographical area of the city served by the maternity unit contained a social mix which was representative of the general social characteristics of the city of Edinburgh. Although the special interests of the Consultants might tend to bias the population slightly, this would be a more significant factor when patients drawn from outside the normal catchment area were considered. For this reason, and also to improve opportunities for follow-up interviews, it was decided to include only those patients with an Edinburgh address. An additional advantage for the Western General Hospital was that the ante-natal clinics were held adjacent to the University Department of Psychiatry, so that office accommodation was readily available for research interviews, thus avoiding disruption of the busy ante-natal clinic.

In order to achieve a steady flow of recruitment to the study, and to avoid biasing the sample, it was decided, after discussion with the Consultants concerned, to limit the selection of patients

to those attending the clinic of Dr. J. B. Scrimgeour. The ante-natal clinics for Dr. Scrimgeour were held regularly on Tuesday afternoons. With the limitation of an Edinburgh address, and by restricting selection to primiparous women and multiparous women with one child, it was hoped that a steady rate of recruitment could be maintained over approximately 6 months, leading to a total sample of approximately 120 subjects. This meant that 4 - 5 subjects would be recruited on average at each clinic with individual interview and testing sessions lasting approximately 45 minutes. During the time allocated to the study, 115 subjects fulfilled the residence and the parity criteria for inclusion. Prior to their attendance at the ante-natal clinic, all potential subjects received a letter outlining the purpose of the research, and asking for their co-operation. In addition, the interviewer gave a more detailed verbal description of the purposes of the study, and answered any questions. Every effort was made to reassure subjects that participation was entirely voluntary, and that it had no implications whatsoever for their own ante-natal and post-natal care. Of the 115 potential subjects, two refused to co-operate, one on the grounds that her husband would object to the study, and the other because she had a pair of twins, approximately 18 months old, who attended the clinic with her and she felt unable to cope with the interview situation. A further two subjects had moved out of the area before they could be interviewed, and one subject spoke no English. Thus, a total of 110 subjects were interviewed in the first phase of the study.

Research Plan

Information was collected from subjects at three points; during pregnancy, in the early postpatrum and at follow-up. The data collection points and the measures used at each point are summarised in Table VIII. Fuller descriptions of the interview situations and the measures used are contained in subsequent sections.

Table VIII

Summary of interview points and questionnaires used in each phase of the study

	Place	Time	Measures Used
Phase I Pregnancy	Antenatal Clinic	18 - 32 weeks	Structured Interview Maudsley Personality Inventory Depression Questionnaire Marital Interaction Questionnaire Sex Behaviour Scale
Phase II Early Postpartum	Home (postal)	6 - 8 weeks	Structured Interview Depression Questionnaire Health in Pregnancy Questionnaire Baby Questionnaire
Phase III Late Postpartum	Home	9 - 12 months	Structured Interview Maudsley Personality Inventory Depression Questionnaire Marital Interaction Questionnaire Sex Behaviour Scale

Interview Situation

The waiting time at the ante-natal clinic was very variable, though it was generally sufficiently long to enable subjects to complete the research interview. The majority of subjects were to be seen after their initial appointment with the obstetrician which occurred between 18 and 32 weeks pregnant. This meant that the research caused minimal disruption to the operation of the clinic, and except for a small number of subjects, did not significantly extend the total time spent at the clinic. Interviews were held in quiet rooms adjacent to the ante-natal clinic in the Department of Psychiatry. Following the structured interview, which lasted approximately 25 minutes, subjects were left to complete the questionnaires on their own.

In the second phase of the research it was intended to interview subjects at the post-natal clinic, which is held approximately six weeks after the birth. However, this clinic generally required a very brief appointment with minimal waiting time, and this factor, coupled with the timetabling required for the care of the young baby, made it difficult to hold interviews at the post-natal clinic. In addition, a large proportion of the subjects did not attend the post-natal clinic, opting instead to attend their own general practitioner for this purpose. For these reasons, the structured interview and questionnaires were modified to enable them to be filled in by the individuals at home, and returned by post. It was planned to follow up non-returns with a home visit.

The final phase of the study comprised a structured interview and repeat administration of earlier questionnaires between 9 months

and 1 year after the birth. These interviews were held in the subject's own home at a time which was mutually convenient. The interview and questionnaire completion lasted approximately 45 minutes. Where a subject had moved away from Edinburgh, it was decided to modify the interview schedule and questionnaires for self-completion and return by post.

Measures Used

The combination of structured interview and questionnaire measures was similar to that used in the pilot study. In survey work of this type, where available information from other relevant studies is relatively sparse, it is helpful to combine the freedom and breadth of response which can be encompassed in the interview situation with the more objective indices of change which can be arrived at by the use of questionnaires. The concept of validity is a difficult one to interpret in this type of study, though both interview questions and questionnaire measures were of high face validity. Further validity checks were planned through factorial analysis and the correlation of direct interview report with change measures derived from repeat administrations of objective questionnaires. There are also problems in interpreting the concept of reliability with this type of measure, in that there is a need to strike a balance between inherently unstable measures and global measures which reflect relatively permanent attitudes or personality characteristics, which could not be expected to change over the relatively short time scale of the study. By concentrating upon frequencies of behaviour whenever possible, particularly in the main criterion variable of sexual behaviour, it was hoped that

this difficulty would be largely avoided.

The structured interview in Phase I of the study (Appendix 1) was designed to collect demographic information, followed by the history of previous pregnancies and reactions to the current pregnancy. This included emotional reactions, health problems, reactions to investigations, the experience of ante-natal care and detailed questions about sexual behaviour during pregnancy. The Phase II structured interview schedule at 6 - 8 weeks postpartum (Appendix 1) was designed to collect information on delivery, including reactions to labour and childbirth, hospital, factors at home including treatment for depression, return of menstruation, dyspareunia, subjective changes in genital anatomy and practise of restorative exercises. An attempt was also made to elicit information on possible changes in relationships within the family. The follow-up interview at Phase III (Appendix 1) began with supplementary questions to the postpartum questionnaire. This was followed by questions which endeavoured to establish whether there had been any long-lasting problems within the postpartum period, and the level of adjustment which had been reached by the time of the interview. The interview then concentrated upon changes in relationships within the family, followed by detailed questioning of changes which might have occurred within the sexual relationship. The final questions were concerned with establishing overall reactions to the pregnancy, childbirth and the type of care, advice and support received from professional staff.

There were six questionnaires used in the study, referred to

as Pregnancy Questionnaire 1 - 6 (PQ1 - 6) in Appendix 2. The background and development of these questionnaires will now be described.

(i) Maudsley Personality Inventory (PQ1). This questionnaire is designed to measure the two factors of extraversion and neuroticism which form the two major dimensions of Eysenck's theory of personality. The MPI was derived from a number of personality scales originally developed by Guilford and the Maudsley Medical Questionnaire (Eysenck, 1956). A questionnaire of 261 items was administered to 200 male and 200 female subjects and the correlations of these items with R (Rhathymia) and C (Cycloid Emotionality) were analysed. Items which indicated sex differences were eliminated. In this way a questionnaire made up of 48 items was created with 24 items to measure neuroticism (N) and 24 to measure extraversion (E). Answers were scored using the "Yes, No or ?" format with two points being allocated for an answer in the direction contributing to the scale, and one point for a question mark. The maximum score which can be obtained on each scale is 48, and the mean scores for normals (Eysenck, 1956) are N = 18.63 (SD 11.19) and E = 24.89 (SD 9.67). The split half reliability coefficients quoted are 0.88 for N and 0.83 for E. The splitting technique used to obtain the reliability coefficients has been criticised by McGuire et al (1963) who showed that significantly lower reliability coefficients were obtained with a more stringent splitting technique which avoided items which were essentially similar being placed in separate halves.

The short form of the test was developed for use in situations

which require a quick assessment of neuroticism and extraversion. Eysenck (1958) found that the correlations between the short scales of 6 questions and their respective full scales were almost as high as the original test reliabilities. McGuire et al (1963) confirmed these correlations (N, 0.89; E, 0.70) and their results indicated that the extraversion scores obtained from the short form fit the Eysenck personality theory more accurately than the full scale scores. They concluded that the MPI had value in such fields as market research and personality investigations, though its value as a clinical tool for use with psychiatric patients was considered questionable. Despite these doubts about its relevance as a clinical tool the MPI has been used in so many studies that its value as a "marker test" warranted its inclusion in the present study.

(ii) Depression Questionnaire (PQ2). Although a variety of instruments have been developed for the measurement of depression in psychiatric populations, there are few satisfactory instruments which can be used to measure fluctuations in mood over relatively short time scales in selected populations. Pitt (1968) developed a questionnaire consisting of 24 short questions based upon clinical experience of depressive illness, and the special anxieties of child-bearing women. The questions are concerned with current feelings and experiences, and administratively have the advantage that they are scored in a "Yes, No, Don't Know" fashion, which is similar to that used for the MPI. The 24 questions were chosen to measure 12 "factors" of a hypothetical nature which were not necessarily mutually exclusive. There are two questions per

factor, one expecting the morbid answer "Yes" and the other "No". The "factors" are: Depression, Anxiety, Guilt, Irritability, Hypochondriasis, Depersonalisation, Retardation, Cognition, Dependency, Appetite, Sleep, Libido. A morbid answer scores 2 points, "don't know" 1 point and a healthyanswer zero. The maximum score is 48 points. The questionnaire was first administered by Pitt to a group of 40 subjects during pregnancy at 28 and 34 weeks. Test - retest reliability was +0.76 ($t = 7.2$, $d.f. = 38$, $p < 0.001$). Validity was assessed by interviewing 40 subjects drawn from the ante-natal clinic, maternity wards and the post-natal clinic in roughly equal proportions. An interviewer, ignorant of the questionnaire score, rated subjects according to a scale based upon the Hamilton Rating Scale for Depression (Hamilton, 1960). A Spearman rank correlation coefficient was calculated between the clinical ratings and questionnaire scores, and $r = +0.78$ was obtained ($t = 7.7$, $d.f. = 38$, $p < 0.001$). Data were also presented by Pitt (1968) on the first 164 subjects who completed the questionnaire in the maternity wards, ante-natal and post-natal clinics.

Given acceptable reliability and validity, the fact that it has been appropriately standardised on this highly selected population makes Pitt's questionnaire particularly suitable for the measurement of affective change in pregnancy and the postpartum period. His data provide a yardstick against which other population samples can be measured. In a study into the experience of women undergoing a first pregnancy, Breen (1975) administered Pitt's scale to 51 women on two occasions. The first administration

was at about 10 weeks prepartum, and the second administration at about 10 weeks postpartum. Her results for the two administrations and those of Pitt's (1968) study are shown in Table IX.

Table IX

Norms for the Depression Scale

Administration	Pitt		Breen	
	$\bar{x}$	S.D.	$\bar{x}$	S.D.
Pregnancy	14.6	7.9	15.46	7.97
Early Postpartum	11.89	7.7		
Late Postpartum	11.82	7.9	13.6	9.63

Breen used the same definition of postpartum depression as Pitt, that is an increase in score on the questionnaire by six or more points at the second administration. She offered three possible explanations for her finding of a smaller proportion of depressed women (21% instead of 40%); firstly, method of administration (home situation rather than hospital questionnaire), secondly, the fact that Pitt's sample contained multiparous as well as primiparous women, and thirdly, the fact that Pitt tested women at an earlier date postpartum (6 - 8 weeks, as opposed to 10 - 15 weeks postpartum). If all the women whose scores increased in Breen's sample are included in the depressed group, the results are roughly the same for both studies.

(iii) Marital Interaction Questionnaire (PQ3). The measurement of patterns of marital interaction, as distinct from changes in sexual relationships, posed a number of problems. The main difficulty was the lack of a well standardised assessment instrument appropriate to the population under study and relatively undemanding in terms of administration time. Questionnaires concerned primarily with the assessment of marital discord (Locke and Wallace, 1959) were considered too narrowly focused for the purposes of the present study. Since the time this study was planned there have been a number of helpful reviews of the techniques available (Cromwell et al, 1976; Weiss and Margolin, 1977), and Spanier (1976) has published the Dyadic Adjustment Scale which seems to be well designed and appropriately standardised, marital questionnaire.

At the planning stage of the present study McAllister et al (1975) provided information on a questionnaire which they were developing. This questionnaire sampled a wide range of marital behaviour and allowed for a graded response to individual items, rather than the usual Yes/No procedure. Two parallel forms were developed, one for women and the other for men. The first 34 questions of the female form were concerned with demographic information and other factual information about the marital situation. Questions 35 - 228 constituted the marital interaction questionnaire proper and responses were made to each question by circling the appropriate response indicating frequency, that is "Very seldom", " Seldom", "Often" and "Very often". The behaviours sampled by this questionnaire and the format employed were considered appropriate to the present research. However, as the

questionnaire was at an early stage of development, there was considerable redundancy in the items, and an unacceptably long administration time given the requirements of the present study.

Although it was known that data were being collected in a number of settings on the original marital questionnaire, with a view to reducing the number of items by factorial analysis, it was not possible to wait for this work to be completed. It was, therefore, decided to reduce the number of items on an a priori basis, in order to create a questionnaire with an acceptable administration time. Inspection indicated that the questionnaire items could be grouped into broad categories: Discussion and Decision Making, Social Activities, Quarrels and Criticisms, Attentiveness, Sexual Behaviour, Evaluation of the Relationship, Shared Activities, Family Matters, and Children. Items were selected to cover these main areas by excluding items which were considered ambiguous, repetitive or potentially unacceptable to the population under study. It was hoped that the overall balance of the original questionnaire was retained in the modified version which contained 75 items. It was decided to carry out factor-analytic analysis of this modified marital questionnaire in order to establish scales which would measure the broad areas of marital interaction.

(iv) Sex Behaviour Scale (PQ4). The measurement of sexual behaviour posed similar problems to the measurement of marital interaction in the present context. Bentler (1968) has criticised early attempts to derive sexual behaviour scales chiefly on the grounds of reliance upon very small samples. His attempts to produce a

Guttman scale of sexual behaviour served as a starting point for other researchers in this area (Eysenck, 1972; LoPiccolo and Steger, 1974). However, as Eysenck has pointed out, scales of this type are most appropriately regarded as scales of sexual experience. The issue is further complicated by the too frequent reliance upon married and unmarried student volunteers. LoPiccolo and Steger have drawn attention to the need for cautious interpretation of such results on the basis of Kaats and Davis (1971) finding that volunteers for sex research do not form a representative sample of the general population.

The main alternative approach to the work of Bentler has been concerned with the measurement of sexual attitudes (Eysenck, 1970; Fretz, 1975), and most work relies heavily upon the scales developed by Thorne (1966). These studies have generally used student volunteers, sex offenders or individuals seeking treatment for sexual problems. Although these scales may be useful in identifying extreme sexual attitudes, particularly in the area of sexual deviance, they are insensitive to small differences in an essentially normal sample.

Scales of the Bentler type were rejected largely because of their inadequate standardisation and their undue reliance upon historical data to determine levels of sexual experience. They were regarded as too insensitive to be used as a measure of change in the quality of the sexual relationship of married couples not selected on the basis of a sexual problem. Sexual attitude scales were rejected on the grounds that the scale employed in the pilot

study did not contribute significant additional information compared with the more direct measure of sexual behaviour contained in the Sexual Inventory. It seems reasonable to assume that sexual attitudes are relatively enduring and insensitive to fluctuations in sexual behaviour over a short period. Furthermore, there is no evidence on the basis of the pilot study that they set the conditions for changes which occur in sexual relationships during pregnancy or following childbirth.

For the purposes of this study "sexual adjustment" was conceptualised as a process rather than a state which it was appropriate to assess by self-report objective questionnaires. Although sexual relationships are dyadic in character an individual's personal perspective on their own sexual adjustment within a relationship can be regarded as valid. There is of course no implication or guarantee that the assessment would be endorsed by their partner. Self-report inventories and questionnaires of this type have been shown to yield comparable data across occasions, clients and interviewers (Jehu, 1979), and they are certainly appropriate to naturalistic studies where direct measures would be unacceptable, or inappropriate due to contamination by the method of observation.

The items incorporated in the Sexual Inventory, used in the pilot study, were assessed for content validity in relation to other sexual behaviour questionnaires and selected to sample a range of components thought to contribute to the overall concept of "sexual adjustment". It was intended to carry out a factor analytic investigation of the questionnaire to determine whether significant data

reduction was possible and to identify component scales to improve the definition of the concept, the major components of which were judged to be frequency, desire, interest, satisfaction, emotional reactions, discomfort and partner reactions. Thus "sexual adjustment" was interpreted as the individual's subjective global evaluation of their current sexual functioning within the marital relationship. Responses to the items were on a frequency measure which was considered most appropriate because such judgements are relatively easy to make and have high face validity. This does not imply that "frequency" is necessarily the most important parameter of sexual behaviour.

It was decided to adopt a similar format for administration as used for the measurement of marital interaction (PQ3). Respondents were instructed to circle a number indicating an appropriate frequency for each item. In this way it was hoped to obtain a scale which would indicate the level of sexual adjustment before pregnancy, as well as allowing the computation of change scores following the second administration at postpartum follow-up.

(v) Health in Pregnancy Questionnaire (PQ5). A woman's subjective appraisal of her pregnancy is thought to be related to the presence or absence of minor symptoms or discomforts during pregnancy (Wolkind, 1974). Although a number of symptoms have established physiological or anatomical causes, there are others for which no physiological relationship appears to exist and it is often suggested that they have a strong emotional component. Wolkind derived a 21 item scale of the most commonly occurring symptoms during pregnancy from the Health in Pregnancy interview published

by Grimm and Venet (1966). The association of health problems in pregnancy with change in sexual behaviour postpartum was only partially confirmed by the pilot study. This may have been due partly to the delayed administration of the questionnaire as a result of the retrospective nature of the investigation. The scale is completed by circling "Yes" or "No" in response to each item and the score is obtained by totalling the number of positive responses.

Wolkind administered the Health in Pregnancy Questionnaire, together with a Malaise Inventory derived from the Cornell Medical Index, to 118 English speaking mothers attending an ante-natal clinic. The Malaise Inventory consisted of 24 questions which were mostly somatic items common in neurotic disorders. Wolkind felt that the strong correlation between the two scales ($r = 0.53$, $p<0.001$) could not be entirely accounted for on the basis of overlapping items. He identified a 'neurotic' group who comprised the top third on the Malaise Inventory. By examining the Health in Pregnancy Questionnaire items, as completed by the non-neurotic and neurotic groups, he was able to identify three sets of items. The first set, which appeared equally in the neurotic and non-neurotic groups, were related to well-established physiological or anatomical changes during pregnancy. The second set consisted of items occurring more frequently in the neurotic group, but not uncommon in the non-neurotic group. The remaining set of six items were uncommon in the non-neurotic group and were concerned with headaches, appetite and unusual physical sensations. These items correlated strongly with the Malaise Inventory and Wolkind suggested that they represented the continuation of previously

existing symptoms into the pregnancy period.

(vi) Baby Questionnaire (PQ6). The hypothesis that the mother's perception of the baby as more difficult than average would lead to a deterioration in sexual adjustment in the postpartum period was not confirmed in the pilot study. It seemed reasonable to assume that this negative finding might have been due to delayed administration of the assessment. This would have permitted both retrospective falsification and the dissipation of temporary effects during the initial adjustment period. It was decided to retain the measurement of this aspect based upon the Baby Questionnaire described by Breen (1975), in order to monitor temporary effects and control for delayed administration in the pilot study.

The six items of Breen's questionnaire were rated first for the 'average' baby and then for 'own' baby. A discrepancy score can be calculated from the difference between the two ratings. Breen administered the scale to 51 women between 2 and 3 months after the birth of a first baby. A positive discrepancy score was obtained by 33 women and a negative or null discrepancy score by 18 women. Information was also collected from doctors' ratings and from the depression questionnaire described by Pitt (1968). Although rather low correlations were obtained, the results were in the expected direction with a large depression score postpartum being related to a difficult pregnancy and poor health of the baby. However, the difference in depression scores pre and postpartum did not appear to be correlated with perception of the baby as measured by the baby questionnaire.

Statistical Analysis

The analysis of data obtained in the present study consisted of two major elements. The questionnaire data were readily scoreable and relatively little manipulation was required to permit these scores to be entered on to punch cards for computer analysis. The demographic and historical information, collected during the interview in the first phase of the study, were also coded prior to administration to render entry on to punch cards a comparatively simple matter. A proportion of the information collected in the second and third phase interviews was also suitable for analysis in this manner.

The subjective reactions and observations of individual subjects concerning their experience of pregnancy, childbirth and motherhood posed a much more complex problem. In order to maximise the scope of computer analysis, it was decided to code as many items as possible from the interview responses. Inevitably this will have led to some loss of the qualitative subjective component of responses. To compensate for this deficiency, records were carefully scrutinised for idiosyncratic responses which might lead to hypotheses or conclusions about significant experiences for individual subjects. Unfortunately, this approach can not entirely compensate for the loss of richness which inevitably occurs in a large scale statistical analysis.

All coded information was hand punched on to computer cards and the statistical analysis was then carried out using programs available in the Statistical Package for the Social Sciences (Nie et al, 1970) mounted on one of the Edinburgh Regional

Computing Centre computers. The initial step is surveying the large amount of data available was the use of the Frequencies Program for the three phases of the study. The analysis then concentrated upon the Marital Interaction Questionnaire (PQ3) and the Sex Behaviour Scale (PQ4). The two administrations of PQ3 and PQ4 were each factor-analysed using the Factor Program with principal components analysis and varimax rotation. In addition the difference scores obtained from the two administrations were also subjected to factor analysis. The factors obtained from the two administrations and the difference scores were compared and an attempt was made to produce meaningful scale scores which could be improved by adding and subtracting items from the scales in the light of their correlations with the remaining items.

The criterion variable of the change score on the Sex Behaviour Scale (PQ4) was then analysed in relation to interview and questionnaire measures in the three phases of the study using analysis of variance or t-tests as appropriate. It was anticipated that there would be unequal N's in most groups and although the F and t tests are robust they are more affected by non-normality and heterogeneity when N's are unequal (Snedecor and Cochran, 1967). However, only serious differences in variances are important and even if significant differences in variances are found, Guilford (1965) recommends proceeding with the analysis but discounting significance levels somewhat. Unfortunately, tests for homogeneity of form and variance are not very satisfactory (Guilford, 1965) and they provide little guidance to the extent of the heterogeneity or how seriously it affects the validity of the F or t-test. In those cases where the

analysis contained very small N's and Bartlett's test proved significant it was decided to accept only the higher significance level of $P < .01$ and to interpret values of p between 0.05 and 0.01 as trends in the data.

Although the development of hypotheses to be tested provides some protection against the unwarranted interpretation of significant findings resulting from chance; the large number of potential variables in the present study poses some problems. In the analysis of changes in postpartum sexual behaviour eighty-one variables were examined and with this number of comparisons significant results could be expected to arise by chance roughly four times at the 0.05 level and once at the 0.01 level.

The significant variables and those showing a strong trend were then incorporated in a series of multiple regression analyses using the Regression Program of SPSS. In this way it was hoped to determine predictors which could be used at convenient points in pregnancy and the postpartum period to predict long term changes in sexual adjustment. Emphasis was placed upon information that would be readily available in most clinical situations, thus specialist questionnare scores were largely excluded from this phase of the analysis.

CHAPTER VIII

RESULTS

Introduction

The first phase of the study yielded a total of 115 subjects who fulfilled the parity and residence criteria. Of these 115, two refused to participate, one spoke no English and a further two moved out of the area before they could be interviewed. Thus, a total of 110 subjects were interviewed in the first phase.

There were three neonatal deaths in the sample and for reasons of privacy and compassion it was decided that these mothers would not be included in the later phases of the study. This left 107 subjects who received the second phase interview schedule and questionnaires. Of these, four could not be contacted within the appropriate time scale because they had moved away with no forwarding address available (2 cases) or they failed to reply to initial postal contact and subsequent home visits (2 cases). In one case it later emerged that the person concerned had been on extended holiday abroad and in the other case no explanation was forthcoming.

The 103 subjects eligible for inclusion in the final phase of the study were followed up with home visits and there was only one case in which contact was lost. This arose as a result of rehousing in a corporation modernisation programme and the unwillingness of the local authority to provide information on the new address of the subject. One further subject's results could not be included in the overall analysis because she had separated from her husband

immediately after the birth. Although at the time of interview she was involved in a settled relationship, this could obviously not be used for comparison purposes. This left a total of 101 subjects on whom full data were available, out of an initial total sample of 115, and first interview sample of 110 subjects. In only two clear cases, and possibly one other, was there evidence of refusal to participate in the study, other cases were lost from the analysis either through problems of maintaining contact over the long period of the study due to moves of house, or to the occurrence of neonatal deaths.

The Sample

The major demographic features of the population studied are set out in Tables X to XII.

Table X.

Ages of subjects and their husbands

		Wife		Husband	
		n	%	n	%
Under 20		1	1	1	1
20 - 24		23	22.8	9	8.9
25 - 29		54	53.5	45	44.6
30 - 34		21	20.8	37	36.6
35 - 39		2	2	7	6.9
Over 40		0	0	2	2
Ungrouped data	Mean	27.1		29.3	
	S.D.	3.46		4.05	

The mean ages and standard deviations for both husbands and wives were very similar to those obtained in the pilot study and indicate a tendency for husbands to be slightly older than their wives.

Table XI.

Place of Birth

Place of birth	Wife		Husband	
	n	%	n	%
Edinburgh	59	58.4	58	57.4
Other Lothians	3	3.0	3	3.0
Other Scotland	19	18.8	21	20.8
Other U.K.	15	14.9	16	15.8
Non U.K.	5	5.0	3	3.0

Table XI shows that approximately 60% of both husbands and wives originated from the Lothians area and approximately 80% were of Scottish origin. Only 5% of wives and 3% of husbands originated from outside the United Kingdom. These figures suggest that the population is very representative of the Scottish population, and the 40% of subjects who originated from outside the Lothian area reflect the importance of Edinburgh as an educational, business and commercial centre. The proportion of subjects in owner/ occupied property was considerably higher than the average for Scotland, but corresponded to the predominant accommodation in the

area served by the maternity unit. Only 4% of subjects were in seriously overcrowded accommodation, approximately 50% were in two or three apartment accommodation.

No attempt was made to establish whether respondents were active members of a religious community and nominal religious affiliations were recorded. Roughly 10% of subjects and their husbands were Catholic, 81% of wives and 71% of husbands were Protestants, and 9% of wives and 20% of husbands were placed in the 'other' category. The 'other' category was largely made up of individuals who firmly denied a religious affiliation. The distribution of educational attainment appeared to be polarised with approximately one third of husbands and wives leaving school with no qualifications, and approximately 40% of both husbands and wives having completed or engaged in some form of higher education.

Table XII.

Socio-economic status using Registrar General's Classification

Classification	n	%
I	19	18.8
II	35	34.7
III	40	39.6
IV	6	5.9
V	1	1.0

A similar picture to that of the pilot study emerged regarding social class distribution, with the distribution skewed towards the higher classification groups (Table XII). Social classes II and III contained approximately 75% of all subjects, whereas social classes IV and V accounted for only 7%. Again this reflected the population served by the hospital and was in line with the results obtained for accommodation and education. The great majority of subjects had been married for between 3 and 6 years, and only two subjects had been married for less than a year at the time of the first interview at the ante-natal clinic. The mean length of marriage was 4.44 years (S.D. = 2.25).

The sample was fairly evenly divided between nulliparous women and women with one previous live birth. One woman had two live children as a result of twins. In all, 55% were nulliparous subjects, though only 45% were undergoing their first pregnancy. There were 13 subjects who had undergone at least one previous spontaneous abortion and five subjects who had undergone at least one therapeutic abortion. Abnormalities were present in four of the live children, such as spina bifida, Downs' syndrome and blindness.

Summary

Complete data were available on 101 subjects who fulfilled the admission criteria during the time of the study. This gave an overall response rate of 88%, though the true figure is near to 96% if only refusals are counted, that is ignoring neo-natal deaths, lost contact due to moves out of the area, and one case of separ-

ation. The sample was representative of the local population with 60% of subjects originating from Edinburgh or the Lothians, and a total of 80% from within Scotland. The sample was weighted towards individuals of higher socio-economic status and educational level and there was a greater proportion of home owners than would be expected in the general population. This reflected the population characteristics of the area in which the hopsital is located. The proportion of women expecting their first baby and those who already had one child were similar, and the average length of marriage was approximately $4\frac{1}{2}$ years. A little over 50% of the women in the sample were in the 25 - 29 year age range.

Questionnaire Measures

The results of the questionnaires used in the various phases of the study will now be presented, with the exception of the Marital Interaction Questionnaire (PQ3) and the Sex Behaviour Scale (PQ4) which will be dealt with in the following sections. Data from earlier work on these questionnaires by other authors and from the pilot study are presented for comparison purposes where appropriate. TableXIIIshows the results for the MPI.

Table XIII

Comparison of MPI (PQ_1) Scores

Study	Neuroticism			Extraversion		
	n	mean	S.D.	n	mean	S.D.
Phase I	101	6.62	3.23	101	6.95	3.14
Phase III	101	6.49	3.67	101	7.15	3.06
Pilot	20	6.85	3.16	20	5.90	2.84
Eysenck	400	6.15	3.42	400	7.96	2.98

There were no differences in N scores though the differences in E scores between Eysenck's norms and both Phase I and Phase III were statistically significant (Eysenck vs Phase I, $t = 2.92$, d.f. = 499, $p < 0.005$; Eysenck vs Phase III, $t = 2.39$, d.f. = 499, $p < 0.025$). However, the differences in E scores were not so large in absolute terms as to be of practical importance. This can probably be accounted for by the younger average age of Eysenck's sample and the fact that both male and female subjects were included by Eysenck in his study.

The results for the three administrations of the Depression Questionnaire (PQ2) are shown in Table XIV.

Table XIV

Depression Questionnaire (PQ2) Scores

	n	$\bar{x}$	S.D.
Phase I	101	14.91	7.55
Phase II	101	13.31	8.76
Phase III	101	11.09	8.25

Phase I v Phase II, $t = 1.70$, d.f. = 100, p = n.s.

Phase I v Phase III, $t = 4.29$, d.f. = 100, $p < 0.001$.

Phase II v Phase III, $t = 3.26$, d.f. = 100, $p < 0.005$.

The trend across all studies is for depression scores to be highest during pregnancy and to fall steadily in the postpartum period. Pitt (1968) referred to a ;

"highly significant tendency for questionnaire scores to drop by a mean of just under 3 points after delivery",

though he did not give details of the analysis. Although Breen (1975) reported a similar trend the results did not reach statistical significance. Variability between the studies may be due more to slight variations in the time of sampling than to any differences between the samples.

In the present study there was no significant difference between depression scores measured during pregnancy and at 6 - 8 weeks postpartum, though there was a highly significant difference between

scores during pregnancy and at follow-up (approximately 10 months postpartum). There was also a significant difference between depression scores at the immediate postpartum administration and the follow-up. A comparison of results obtained from the three studies at the same sampling points is shown in Table XV.

Table XV.

Comparisons with Depression Scores in other Studies

		Present Study	Pitt	Breen
Phase I (Pregnancy)	n	101	164	51
	$\bar{x}$	14.91	14.46	15.46
	S.D.	7.55	7.90	7.97
Phase II (Early Postpartum)	n	101	164	51
	$\bar{x}$	13.31	11.8	13.6
	S.D.	8.76	7.90	9.63

There were no significant differences between any of the groups in either phase of administration. This was not really surprising as the studies dealt with relatively well defined homogeneous populations, i.e. pregnant women within a small age range.

A comparison of scores obtained on the Health in Pregnancy Questionnaire (PQ5) is shown in Table XVI.

Table XVI

Health in Pregnancy (PQ5) Scores

Study	Main	Pilot	Wolkind
n	101	20	118
Mean	7.09	5.45	7.85
S.D.	5.42	3.20	3.54

Main v Wolkind t = 1.21, d.f. = 217, p = n.s.

The results obtained on the Health in Pregnancy Questionnaire were very similar to those obtained by Wolkind in his study of 118 women attending an ante-natal clinic.

Table XVII compares results on the Baby Questionnaire (PQ6).

Table XVII

Baby Questionnaire (PQ6) Scores

Study	Main	Pilot	Breen
n	101	20	51
Mean	1.19	1.85	1.16
S.D.	4.50	4.44	3.19

Main v Breen t = 0.05, d.f. = 150, p = n.s.

The results obtained in the present study, and those of Breen were very similar, and both indicated slightly positive evaluations of babies, by their mothers. The slightly higher figures obtained in the pilot study may be attributed to the much later administration on that occasion which resulted in loss of immediacy for the ratings.

Summary

Comparisons with other studies which used the same questionnaires strongly suggested that similar populations had been sampled. With the exception of Eysenck's results on the MPI, where the standardisation was more appropriate to the general population, all studies have involved pregnant women and to that extent the results were not surprising. It would seem that any bias in the present sample, due to socio-economic or educational factors, did not significantly affect questionnaire results, where these can be compared with other published studies. The fall in depression scores following childbirth was not unexpected as similar results were obtained by Pitt and Breen. The most probable explanation for this finding is that anxiety items and somatic symptoms included in the questionnaire inflate pregnancy scores due to the physiological and anatomical disturbances commonly experienced at that time.

Marital Scales

The Marital Interaction Questionnaire (PQ3) yielded scores on 75 items from two administrations. The factor structure of the scores from each administration and the difference scores were examined, using the Factor Program of SPSS with principal components analysis

and varimax rotation. In order to be included in the analysis factors must have an eigenvalue greater than one, and contribute more than 1% to the total variance. Within these limits, 23 factors were produced for Phase I administration, 23 factors for Phase II administration and 23 factors for the difference scores. Many of the later factors represented the contribution of single items to the overall scale, and in order to make the analysis more meaningful, factors which contributed less than 3% to the total variance are not reported. This resulted in the inclusion of the first 7 factors for each separate administration, and the first 8 factors for the difference scores. Tables XVII and XIX show the eigenvalues, percentages of total variance accounted for and the cumulative percentages of variance for the unrotated factors obtained from Phase I and Phase III respectively.

Table XVIII

Marital Interaction Questionnaire (PQ3) Phase I,
amount of variance accounted for by first seven factors

	eigenvalue	Percentage of variance	Cumulative percentage
Factor I	13.12	17.5	17.5
Factor II	6.16	8.2	25.7
Factor III	3.82	5.1	30.8
Factor IV	3.09	4.1	34.9
Factor V	2.62	3.5	38.4
Factor VI	2.45	3.3	41.7
Factor VII	2.27	3.0	44.7

Table XIX.

Marital Interaction Questionnaire (PQ3) Phase III, amount of variance accounted for by first seven factors

	eigenvalue	Percentage of variance	Cumulative percentage
Factor I	14.70	19.6	19.6
Factor II	6.60	8.8	28.4
Factor III	4.43	5.9	34.3
Factor IV	3.27	4.4	38.7
Factor V	2.84	3.8	42.5
Factor VI	2.60	3.5	45.9
Factor VII	2.30	3.1	49.0

The factor structure for the two administrations showed little correspondence, with the exception of Factor II in each administration. These factors, which were very similar to Factor I of the difference scores, (Table XX), were concerned with disharmony in the marital relationship, and with the wife seeing her partner as quarrelsome and argumentative. The first factors in each administration were concerned with positive evaluation of the relationship. In the administration conducted during pregnancy the main emphasis was upon items which specified a warm, loving relationship and a caring, concerned husband. At the follow-up administration the emphasis was more upon sharing, and joint decision making and action. It seems likely that the emergence of these two major components was strongly determined by the special nature of the

marital relationship, during pregnancy and the postpartum period.

Table XX shows the eigenvalues, percentages of variance accounted for and cumulative percentages for each of the unrotated difference factors.

Table XX

Marital Interaction Questionnaire (PQ3) analysis of difference scores and amount of variance accounted for by first eight factors

	eigenvalue	Percentage of variance	Cumulative percentage
Factor I	9.05	12.1	12.1
Factor II	6.29	8.4	20.4
Factor III	3.53	4.7	25.2
Factor IV	3.44	4.6	29.7
Factor V	3.04	4.1	33.8
Factor VI	2.57	3.4	37.2
Factor VII	2.49	3.3	40.5
Factor VIII	2.26	3.0	43.5

An item analysis was conducted on the rotated difference score factors by combining the items which loaded most highly on each of the first 8 factors into factor scales. Scores on these factor scales were then correlated with all difference scores and items were added and subtracted in order to improve the homogeneity of the scales. The items which were finally selected for inclusion in

the marital scales are shown with their rotated factor loadings in Appendix 3.

The first Marital Scale (MS1) was concerned with quarrelsomeness and argumentativeness within the relationship. Sharing, compatibility and openness seemed to be measured by Marital Scale 2 (MS2). In Marital Scale 3 (MS3) the emphasis was on disharmony, generated from relationships with important people outside the central relationship, such as parents and friends. Marital Scale 4 (MS4) reflected the "switching off" that some husbands practice and failure to pay attention to issues which concern their wives. Marital Scale 5 (MS5) appeared to refer to serious hostility and coldness within the relationship. Awareness of sexual attractiveness and a positive approach to sex within the relationship was sampled by Marital Scale 6 (MS6). Helpfulness around the home and participation in household chores was measured by Marital Scale 7 (MS7). Finally, Marital Scale 8 (MS8) was concerned chiefly with shared social activities and participation together in leisure activities.

The inter-correlations between the eight marital scales were quite low as would be expected on the basis of an analysis which was designed to produce orthogonal factors. The details of the inter-correlations are shown in Appendix 3. The internal consistency reliability coefficients for the scales derived from the two administrations of the questionnaire using Cronbach's Alpha (Cronbach, 1951) were acceptable and they ranged from .69 to .93. The mean difference scores and statistical significance data are shown in Table XXI.

Table XXI

Marital Scale Difference Scores

	Mean	S.D.	t	df	p
MS1	0.14	2.54	0.55	100	n.s.
MS2	-0.44	3.05	1.45	100	n.s.
MS3	0.31	1.52	2.04	100	0.05
MS4	0.22	1.92	1.15	100	n.s.
MS5	0.02	1.10	0.18	100	n.s.
MS6	0.01	1.94	0.05	100	n.s.
MS7	-0.18	1.28	1.41	100	n.s.
MS8	-0.77	1.84	4.20	100	0.001

The significant difference obtained on MS3 could perhaps be accounted for by an increased tendency for grandparents and friends to "interfere" in the couple's relationship with advice on child rearing practices and other family matters, following the arrival of a new baby. It is surely not surprising that there was a highly significant reduction in scores on MS8, which focused on shared social activities and leisure persuits. This is, perhaps, one of the more inevitable consequences of having a baby.

Summary

Although a similar number of factors emerged from the analysis

of the two administrations of the questionnaire, there was no clear correspondence between the two sets of factors. This may reflect the special characteristics of the marital relationship at the two points of administration. The factors obtained from the analysis of the difference scores were generally more meaningful. There were eight factors which contributed more than 3% to the total variance, and it was possible to ascribe tentative psychological meaning to the rotated factors. The marital scales produced from these factors showed low inter-correlations, and two scales showed significant differences which can be plausibly interpreted in terms of the effect of childbirth upon marital relationships.

The Sex Behaviour Scale

The data from the two administrations of the Sex Behaviour Scale (PQ4) were analysed in a similar fashion to the Marital Interaction Questionnaire (PQ3). The factor structures of the two administrations and the resulting difference scores were analysed, using the Factor Program of SPSS, with principal components analysis and varimax rotation. In the analysis of PQ4 at Phase I, shown in Table XXII six factors emerged with an eigenvalue greater than one, and these six unrotated factors accounted for 65% of the total variance. Similarly, in the analysis of Phase III, shown in Table XXIII there were six unrotated factors with eigenvalues greater than one which accounted for 72% of the total variance.

Table XXII

Sex Behaviour Scale (PQ4) Phase I, amount of variance accounted for by the first six factors

	eigenvalue	Percentage of variance	Cumulative percentage
Factor I	4.46	24.8	24.8
Factor II	2.52	14.0	38.8
Factor III	1.34	7.4	46.2
Factor IV	1.21	6.7	52.9
Factor V	1.14	6.3	59.3
Factor VI	1.09	6.1	65.4

Table XXII

Sex Behaviour Scale (PQ4) Phase III, amount of variance accounted for by first six factors

	eigenvalue	Percentage of variance	Cumulative percentage
Factor I	5.38	29.9	29.9
Factor II	2.41	13.4	43.3
Factor III	1.60	8.9	52.2
Factor IV	1.40	7.8	60.0
Factor V	1.12	6.2	66.2
Factor VI	1.06	5.9	72.0

The analysis of the difference scores yielded seven factors with an eiganvalue greater than one and these unrotated factors accounted for 72% of the total variance. Table XXIV gives details of the variance of these factors after rotation.

Table XXIV

Sex Behaviour Scale (PQ4) analysis of difference scores and proportion of common variance accounted for by seven rotated factors

	eigenvalue	Percentage of common variance	Number of items with loadings greater than 0.30
Factor I	2.91	22.6	8
Factor II	1.89	14.7	4
Factor III	1.51	11.7	4
Factor IV	2.04	15.8	5
Factor V	1.56	12.1	3
Factor VI	1.57	12.2	5
Factor VII	1.39	10.8	5

The major interest for the present study was in recorded differences in sexual behaviour, pre and post-pregnancy, even though these changes might be comparatively small. For this reason it was decided to concentrate primarily upon the factor structures which emerged from the analysis of the difference scores, in an attempt to understand the components which contribute to changes in sexual adjustment within this specialised population. The correspondence

of the factors derived from the difference scores with the factor obtained from the two separate administrations of the Sex Behaviour Scale (PQ4) was generally quite good and it was possible to match most of the factors. Using only the highest loading items it was possible to produce seven scales with minimum overlap. The following names were attached tentatively to the seven scales; Satisfaction, Distaste, Husband's Satisfaction, Excitement, Difficulty in Responding, Interest, and Tension-Discomfort. The items comprising the scales together, with their rotated factor loadings, are shown in Appendix 4.

The means, standard deviations and significance levels for the total Sex Behaviour Scale Score (SBS) and the seven scale scores are shown in Table XXV.

Table XXV

Changes in Sex Behaviour Scale Scores

	Mean	S.D.	t	d.f.	p
SBS	-5.88	7.98	7.40	100	$p<0.001$
SB1	-1.25	2.56	4.89	100	$p<0.001$
SB2	0.39	1.74	2.28	100	$p<0.025$
SB3	-0.48	1.79	2.66	100	$p<0.01$
SB4	-1.08	1.82	5.95	100	$p<0.001$
SB5	0.98	2.48	3.97	100	$p<0.001$
SB6	-1.34	2.42	5.55	100	$p<0.001$
SB7	0.46	2.22	2.06	100	$p<0.05$

It can be seen from Table XXV that total Sex Behaviour Scale Scores showed a highly significant deterioration at follow-up, compared with pre-pregnancy levels. The individual scale scores showed similar significant differences, with deterioration in sexual adjustment on both positively loaded scales and negatively loaded scales. There were reductions in sexual satisfaction for both wife and husband. Distaste for sexual activity increased and subjects reported lower sexual interest and excitement and greater difficulty in responding. Tension and discomfort in sexual intercourse also increased.

It was noted earlier (pg. 118) that sexual adjustment can be appropriately regarded as a process rather than a state. It follows from this that adjustment can be represented by a continuum along which an individual or couple can move backwards or forwards. Changes in adjustment can arise from a variety of personal experiences and environment events. The dimensions produced from the factor analyses in the present study corresponded well to the hypothesised components of sexual adjustment. The first general factor was judged to be concerned primarily with satisfaction with an additional component of sexual interest. A scale derived from this first factor would have contained 8 items with factor loadings greater than 0.30. However, this factor only accounted for 23% of the common variance and psychologically important components such as "distaste" and "discomfort" would have been omitted. In addition the correlation of the first factor with total score was high ($r = .86$). A large proportion of the inter-correlations between the seven factor scales, using only the highest loading items, were significant (Table XXVI), despite the orthogonal nature of the analysis

and the fact that only scale SB7 contained items which overlapped with other scales. These considerations led to the view that total change score could be regarded as psychologically more meaningful and more truly representative of the concept of "sexual adjustment" than scale scores. A further practical and theoretical point militated against use of the seven scales in subsequent analyses, namely that this strategy would have increased the risk of erroniously statistically significant findings by a factor of seven (pg. 122).

TABLE XXVI

Inter-correlations of Sex Behaviour Scale Scores

	SB1	SB2	SB3	SB4	SB5	SB6	SB7
SB1	1	-0.08 S=0.021	0.46 S=0.001	0.47 S=0.001	-0.12 S=0.13	0.58 S=0.001	0.025 S=0.40
SB2	-0.08 S=0.21	1	-0.11 S=0.13	-0.03 S=0.39	0.23 S=0.01	-0.10 S=0.15	0.53 S=0.001
SB3	0.46 S=0.001	-0.11 S=0.13	1	0.28 S=0.002	-0.16 S=0.05	0.38 S=0.001	-0.02 S=0.41
SB4	0.47 S=0.001	-0.03 S=0.39	0.28 S=0.002	1	-0.26 S=0.005	0.48 S=0.001	0.03 S=0.38
SB5	-0.12 S=0.13	0.23 S=0.01	-0.16 S=0.05	-0.26 S=0.005	1	-0.27 S=0.003	0.53 S=0.001
SB6	0.58 S=0.001	-0.10 S=0.15	0.38 S=0.001	0.48 S=0.001	-0.27 S=0.003	1	-0.05 S=0.29
SB7	0.025 S=0.40	0.53 S=0.001	-0.02 S=0.41	0.03 S=0.38	0.53 S=0.001	-0.05 S=0.29	1

The items included in the Sex Behaviour Scale were evaluated for content validity (pg. 118), though Anastasi (1968) has suggested that content validity may be misleading in this type of questionnaire. Considerations of the relevance and effectiveness of selected items

are important in test construction but validation requires empirical verification. Criterion-related validity was investigated by comparing the subjects' scores on SBS with their subjective evaluations of their sexual adjustment obtained at the follow-up interview. Subjects were asked to compare their sexual behaviour before pregnancy with their sexual behaviour at the time of interview on three dimensions of frequency, interest and satisfaction. On the basis of their responses subjects were placed in one of four categories on each dimension, viz. improved, no change, slight deterioration, marked deterioration. These groups were clearly discriminated on SBS and the results were highly statistically significant, as can be seen from Table XXVII.

Table XXVII

Comparison of scores on SBS with changes in frequency, interest and satisfaction judged at interview

		Improved	No change	Slight deterioration	Marked deterioration	Sig. Level
Frequency	N	13	41	25	22	$p<0.001$
	$\bar{X}$	-1.8	-3.2	-6.8	-12.2	
	SD	14.0	5.0	5.5	6.5	
Interest	N	17	44	20	20	$p<0.001$
	$\bar{X}$	1.5	-3.6	-8.4	-12.0	
	SD	12.3	4.9	5.7	6.8	
Satisfaction	N	10	58	18	15	$p<0.001$
	$\bar{X}$	0.6	-5.2	-6.4	-12.1	
	SD	8.0	7.6	7.5	6.2	

The three components of frequency, interest and satisfaction were regarded as highly related to the concept of sexual adjustment and ratings on these dimensions were combined to produce an index of change in sexual adjustment. Scores on SBS were then compared with the index

using Spearman's rank order correlation method which yielded a validity coefficient of 0.64 ($p<0.001$). This is high in terms of this type of measure, as coefficients rarely exceed 0.80 (Guilford, 1965). Composite scores will generally yield more valid measures and this is an additional factor to be considered in the decision to retain all the items in the SBS. Accuracy of prediction could theoretically be improved by assigning weights to the various items but the practical difficulties are formidable. The construct validity of the Sex Behaviour Scale was supported by the factor analyses of the two administrations of the scale and of the difference scores. There was clear correspondence of factors derived from the separate analyses and the factors were psychologically meaningful and related to the hypothesised components of sexual adjustment. Furthermore, the total SBS score showed a correlation of 0.46 ($p<0.001$) with a factor scale measure of sexual attraction and interest in sex derived independently from the factor analysis of the Marital Interaction Questionnaire.

To some degree the demands of validity and reliability are incompatible (Guilford, 1965). Maximal reliability depends upon high inter-correlations between the items, whereas high predictive validity requires greater heterogeneity of items. Fortunately, compromise is possible and the moderate item inter-correlations usually obtained from well constructed items will yield good validities and satisfactory reliabilities. The practical solution is usually to develop a composite measure which includes many of the relevant factors, as has been done with the SBS. Where test - retest reliability is high the subjects maintain their position in the population between testings and the test

can be considered to measure the same attributes before and after the interval. Unfortunately the application of test - retest reliability in the present situation is rather difficult in view of the long time between testings and the presumption that individuals will change their position in the population during the interval. Thus internal consistency reliability was considered more appropriate and Cronbach's coefficient alpha was calculated for the two separate administrations of the SBS and reliability coefficients of 0.84 and 0.88 were obtained. It was, therefore, concluded that acceptable validity and reliability had been demonstrated for the SBS and its use as a criterion measure for change in sexual adjustment was appropriate.

Summary

The analysis of the two administrations of the Sex Behaviour Scale (PQ4) and the resulting difference scores produced similar factors which could be related meaningfully to the concept of sexual adjustment. Highly significant differences were found on total scores and scale scores following childbirth. The total change score derived from the SBS was found to have acceptable reliability and validity as a measure of change in sexual adjustment.

Sexual Behaviour in Pregnancy

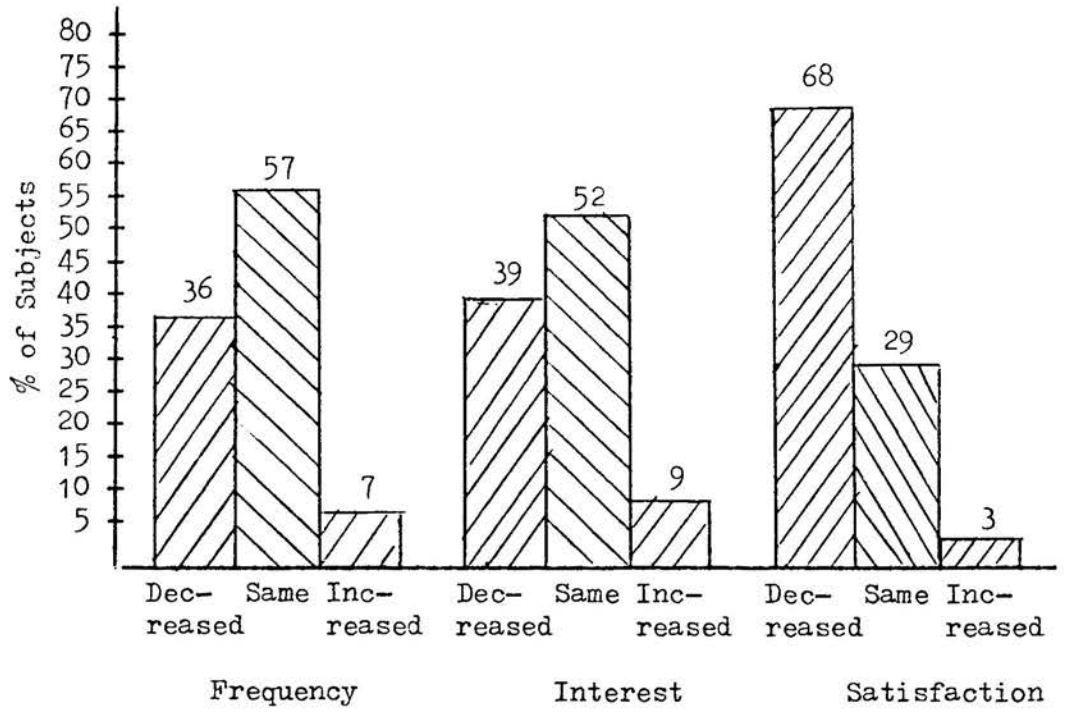
Pattern of sexual behaviour

Information about the pattern of change in sexual behaviour during pregnancy in relation to frequency, interest and satisfaction was collected at the ante-natal interview and in the early postpartum. Subjects who had their initial interview in the second trimester due to an early clinic appointment were seen again briefly in the third trimester to obtain information about subsequent changes in sexual behaviour.

The proportions of subjects who reported changes in aspects of their sexual behaviour during pregnancy are shown in Figures 6, 7 and 8. The figures show the percentages of subjects who decreased, increased or remained the same in terms of frequency of sexual intercourse, interest in sex and sexual satisfaction. The findings for the three trimesters of pregnancy are shown separately.

Fig. 6.

Changes in Sexual Behaviour in the First Trimester



Very few subjects reported an increase in any aspect of their sexual behaviour during the first trimester. A little over a third of subjects reported decreases in frequency of sexual intercourse and interest in sex during the first trimester, whereas two-thirds showed a decrease in their sexual satisfaction. Thus the majority of women experienced a decrease in their sexual satisfaction during the first trimester, though half of this "decreased" group did not report a reduced frequency of sexual intercourse or lower interest in sex.

Fig. 7.

Changes in Sexual Behaviour in the Second Trimester

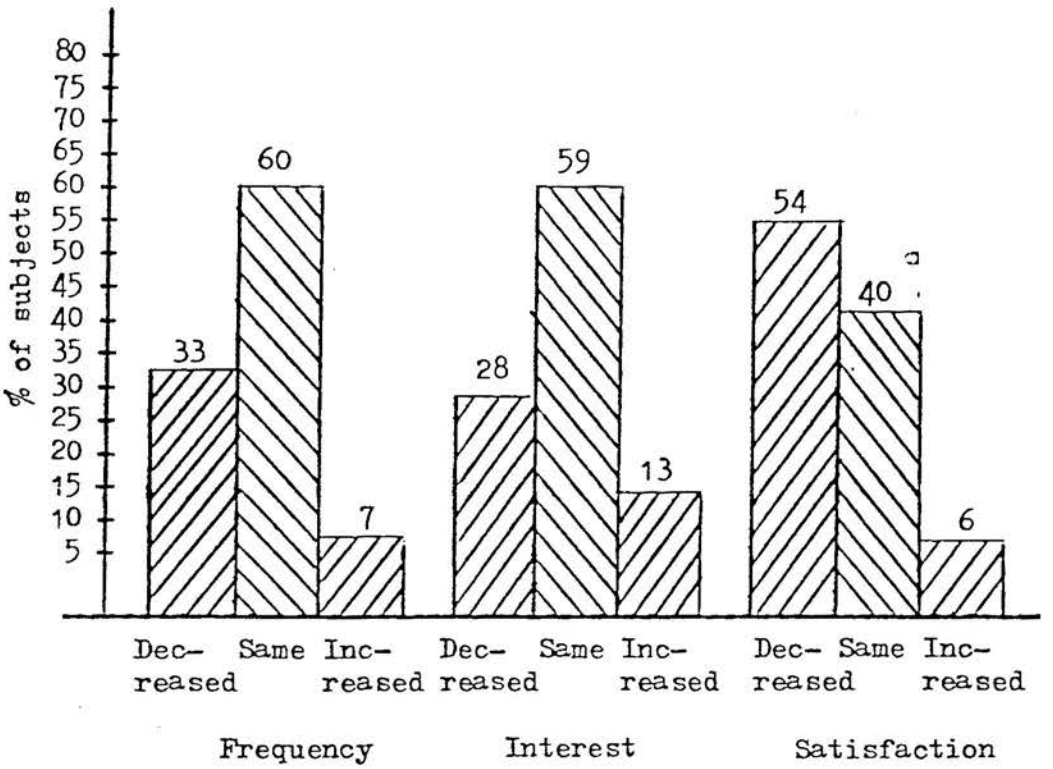
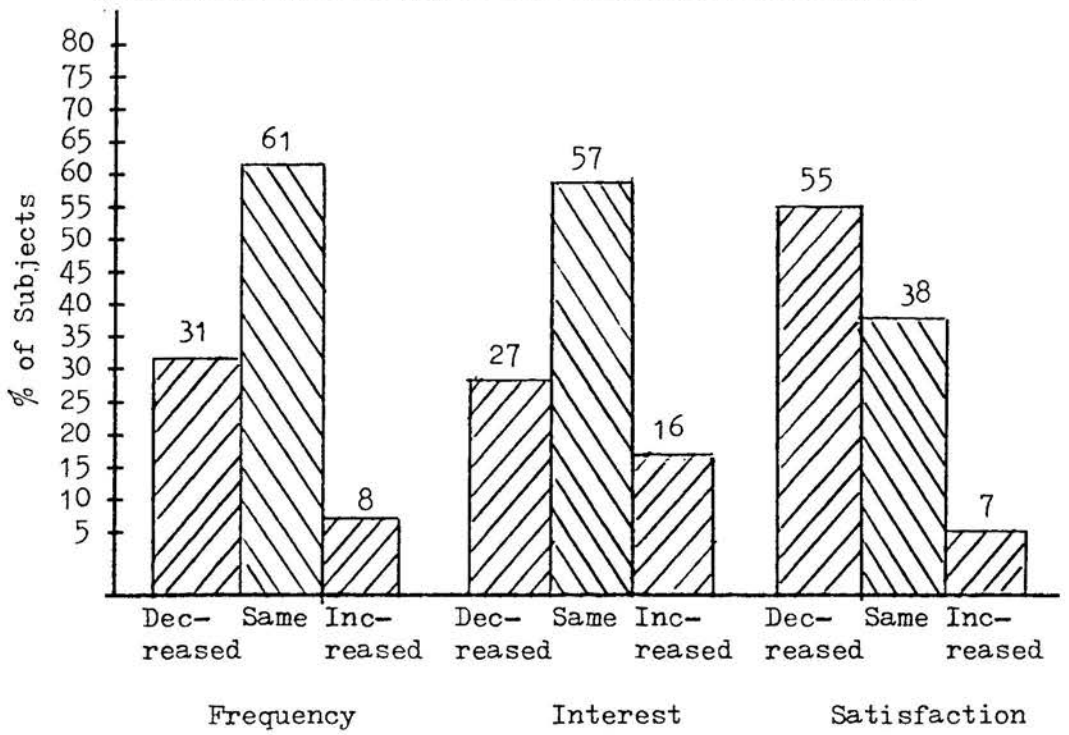


Figure 7 shows that a similar proportion continued to report a reduced frequency of sexual activity in the second trimester. However, a smaller number reported decreased interest and satisfaction compared with before pregnancy. Very similar results were obtained for the third trimester as can be seen from Figure 8.

Fig. 8.

Changes in Sexual Behaviour in the Third Trimester



The Hypotheses

The findings for Hypotheses 1 to 6 concerning sexual behaviour in pregnancy are summarised in Table XXVIII.

Table XXVIII

Summary of findings on sexual relationships during pregnancy

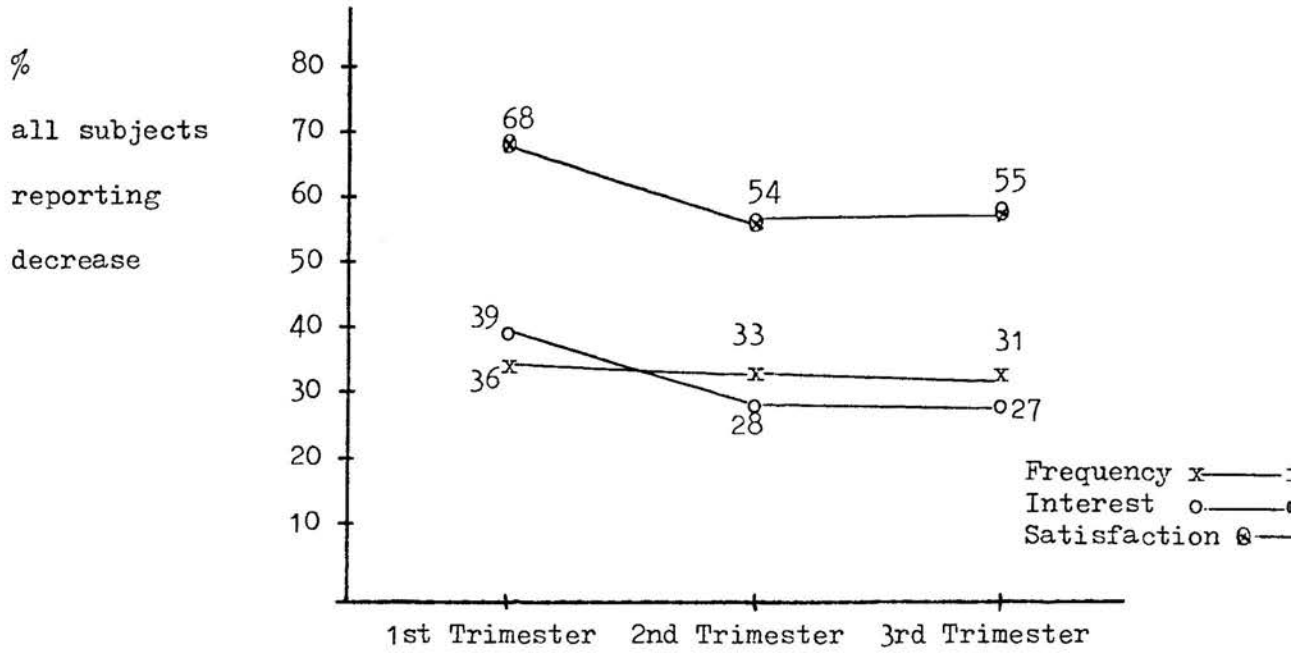
Hypotheses		Figs./Tables	Findings
1	General decline in the third trimester.	Fig. 9	No
2	Primiparas decline in first trimester and recover in second.	Fig. 10	Yes
3	Multiparas show little change in first two trimesters.	Fig. 11	No
4	Poor sexual adjustment before pregnancy linked to adverse changes in pregnancy.	Table XXX	Yes ($p<0.01$)
5	Anxiety over foetus linked to poor sexual relationship in pregnancy.	Table XXXI	No
6	Health problems linked to poor sexual relationship in pregnancy.	Table XXXII	Uncertain

(i) General decline in third trimester

The expected general decline in sexual interest and activity in the third trimester (Hypothesis 1) was not found. The proportions of subjects reporting a decrease in frequency and interest remained similar throughout pregnancy and there was a slight tendency for the proportion reporting a decrease to fall as the pregnancy progressed (Fig. 9).

Fig. 9.

Decreases in Frequency, Interest and Satisfaction during Pregnancy (all subjects)



This effect was more pronounced in the case of satisfaction with decreases reported by two-thirds of subjects in the first trimester, a little more than one half in the second trimester and a similar proportion in the third trimester. However, most subjects reported a marked decline in sexual activity in the last 3 weeks of pregnancy and only 25% of subjects continued to have intercourse during this period.

The aggregated data presented in Figures 6 to 9 disguise considerable individual variation in the pattern of change of sexual response during pregnancy. For some women there was a profound loss of interest in sexual activity, almost from the beginning of the pregnancy, which continued unchanged throughout the pregnancy. Other women showed impairment of response in the first trimester which recovered considerably in the second trimester and remained at that

level, falling away only very gradually in the latter part of the third trimester. These women frequently commented that the physiological disturbances of the first trimester and anxiety over harm to the foetus were responsible for the deterioration. A further group of women reported stable levels of sexual functioning in the first two trimesters, with a reduction in frequency, interest and satisfaction in the final weeks of the pregnancy. Postural discomforts and fears of harming the foetus were again the major reasons advanced for the changes.

(ii) Primiparous versus Multiparous Subjects

It is appropriate to present the findings relating to Hypotheses 2 and 3 together since the predicted differences between the two groups were not found and the overall pattern of response was very similar. The results for nulliparous subjects are shown in Fig. 10 and the results for parous subjects are contained in Fig. 11.

Fig. 10

Decreases in Frequency, Interest and Satisfaction during Pregnancy (Nulliparous Women)

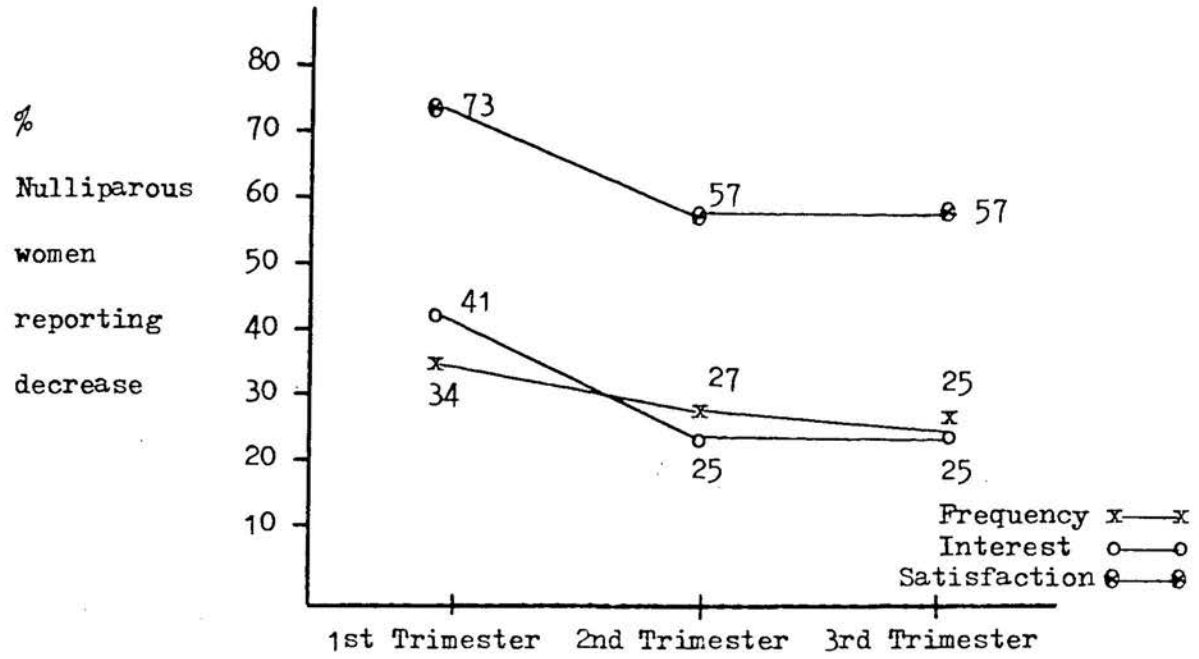
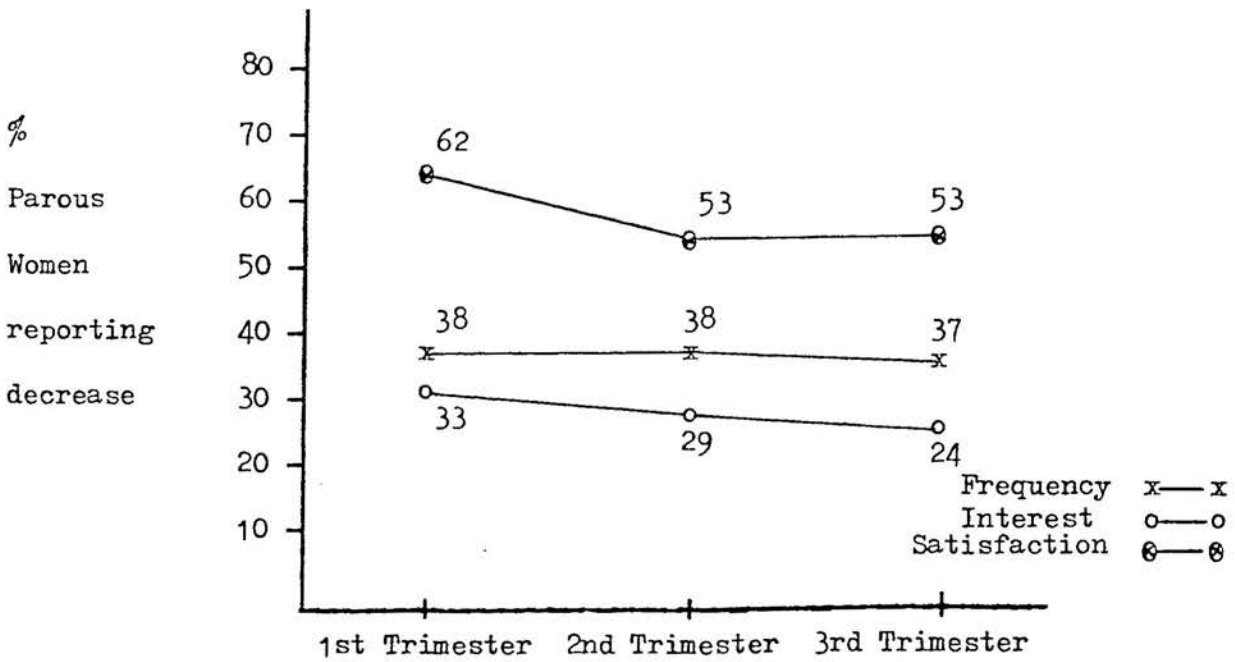


Fig. 11

Decreases in Frequency, Interest and Satisfaction during Pregnancy (Parous Women)



The trends across the three trimesters were very similar for both the nulliparous and parous subjects. Sexual behaviour was most affected in the first trimester, with nulliparous subjects being slightly more affected than parous subjects. In both groups frequency remained fairly steady and there was a small improvement in sexual interest in the second and third trimesters, particularly for nulliparous women. As has already been shown in Figures 6, 7 and 8, sexual satisfaction was the measure most affected by pregnancy and slightly more nulliparous subjects showed a decrease. Although there was some improvement in the second and third trimesters, over half of subjects in both groups continued to report decreased sexual satisfaction. The reasons most commonly put forward to account for these changes were postural discomfort, harm to the foetus, feeling unwell, and tiredness. Although some subjects indicated that a single factor had been responsible for the change, most felt that it was due to a combination of a number of factors.

In addition to detailed questioning about components of sexuality in the three trimesters subjects were asked to make a global evaluation of the effect of pregnancy upon their sexual behaviour. Table XXIX shows the numbers of nulliparous and parous women who felt that their sexual relationship had either improved, deteriorated, or remained the same during pregnancy. There was no significant difference between the two groups in relation to this global evaluation.

Table XXIX

Parity and changes in sexual relationship during pregnancy

Sexual relationship	Nulliparous Women	Parous Women
Improved	7	3
No change	22	18
Deteriorated	27	24

χ^2 (Improved and No Change versus Deteriorated) = 0.10, d.f. = 1, p = n.s.

(iii) Previous sexual adjustment

The relationship between previous sexual adjustment, as measured by the first administration of the Sexual Behaviour Scale, and global evaluations of the effect of pregnancy on sexual behaviour is shown in Table XXX. Those women who had higher levels of sexual adjustment before pregnancy were more likely to report improvement in their sexual relationship during pregnancy, while those with relatively lower levels of sexual adjustment before pregnancy were more likely to report deterioration during pregnancy. These results were highly significant. This confirms Hypothesis 4 and suggests that those couples who have developed a good sexual adjustment before pregnancy may be better able to withstand negative factors occurring during pregnancy and use the positive aspects of pregnancy to consolidate their sexual relationship. Conversely couples with lower levels of sexual adjustment before pregnancy may be less able to combat negative influences.

Table XXX

Previous sexual adjustment (SBS Scores) and changes in the sexual relationship during pregnancy

Sexual Relationship in Pregnancy	n	Mean	S.D.
Improved	10	20.9	6.64
No Change	40	18.67	6.42
Deteriorated	51	14.11	6.26

$F = 7.15 \quad p < 0.01$

(iv) Anxiety about the foetus

Anxiety over harm to the foetus during sexual intercourse was mentioned by a number of women in relation to specific changes in sexual behaviour during pregnancy. The relationship of this anxiety to global evaluations of sexual behaviour in pregnancy is shown in Table XXXI. Although roughly a third of subjects reported that either they or their husband had felt anxiety concerning harm to the foetus during sexual intercourse, this factor was not significantly related to the overall evaluation of the sexual relationship during pregnancy and thus Hypothesis 5 was not confirmed.

Table XXXI.

Sexual Relationship in Pregnancy and anxiety over harm to the foetus

Sexual Relationship in Pregnancy	Anxiety	
	Yes	No
Improved	5	5
No Change	9	31
Deteriorated	18	33

χ^2 (Improved and No Change versus Deteriorated) = 0.33, d.f. = 1, p = n.s.

(v) Health Problems

Roughly three-quarters of subjects experienced no serious health problems during pregnancy, and of the remainder, persistent vomiting during the first trimester was the most commonly reported problem. Nine subjects in the "other" category experienced a variety of problems, of which serious high blood pressure was the most common, and two subjects required hospitalisation for a period. There was no apparent relationship between the occurrence of serious health problems and change in sexual behaviour during pregnancy, though there was a suggestion that some subjects had modified their evaluations to take account of their health problems. Thus, it may be that changes in sexual behaviour were under-reported in this group because they were more readily accepted and assimilated in view of their apparent correspondence with a health problem.

Minor symptoms of pregnancy were assessed by the Health in Pregnancy Questionnaire (PQ5) and the relationship of scores on this questionnaire to sexual adjustment in pregnancy is shown in Table XXXII.

Table XXXII

Sexual Relationship in Pregnancy and Health in Pregnancy (PQ5) Scores

Sexual Relationship in Pregnancy	n	Mean	S.D.
Improved	10	15.30	6.96
No Change	40	12.15	7.71
Deteriorated	51	16.60	6.99

$F = 4.22 \quad p < 0.05$

There was a significant relationship between changes in sexual behaviour and HPQ scores with the greatest number of symptoms reported by the group who showed deterioration in their sexual relationship which provides some support for Hypothesis 6. However, the main contrast was with the no change group, and the improved group showed only slightly fewer symptoms than the deteriorated group. It is difficult to interpret this finding and it emphasises the impression gained from the interviews of rather idiosyncratic responses to the events of pregnancy. Improvement and deterioration are, of course, relative terms and it is perfectly possible that particular factors may cause different reactions depending upon the initial level of sexual adjustment.

A neglected aspect of change in sexual behaviour during pregnancy concerns the husband's reaction to his pregnant partner. A sizeable proportion of the women who reported that postural discomforts and fears of harming the foetus had been important factors in modifying their sexual behaviour indicated that the major objection or concern had been expressed by their husband rather than themselves. A smaller group of women reported that their husbands appeared to lose all interest in them sexually, almost from the moment of conception. One woman expressed frustration because of her husband's lack of sexual interest since she had experienced higher levels of sexual interest in the second trimester than ever before in her life.

Summary

Few subjects reported improvements in sexual functioning during pregnancy, and roughly a third of both nulliparous and parous subjects showed deteriorations in the frequency of sexual activity and sexual interest. Slightly more subjects reported deteriorations in the first trimester, thereafter the levels remained fairly constant throughout pregnancy. The greatest change was in sexual satisfaction with two-thirds of subjects showing deterioration in the first trimester. Again this improved slightly in subsequent trimesters. There was no significant relationship between parity and the components of sexuality or global ratings of the sexual relationship. Individuals with higher levels of sexual adjustment before pregnancy were significantly more likely to avoid deterioration in their sexual relationship during pregnancy. Although anxiety over harming the foetus was mentioned by almost a third of subjects it did not show a significant relationship with change in sexual behaviour.

Postpartum Sexual Behaviour

The information obtained by interview and questionnaire administration during the three phases of the study will now be presented with particular reference to the criterion variable of the Sex Behaviour Scale Score (SBS). Unless otherwise stated the term "SBS Scores" refers to the difference scores calculated from the two administrations of the questionnaire. Data analysis was carried out using the Breakdown Program of SPSS which, in addition to the summary statistics of mean and standard deviation, also yields a one-way analysis of variance. Variables with F ratios significant at the 0.05 level were further analysed for "A posteriori contrasts" using the Least Significant Difference (LSD) method available on the Program Oneway. Although objections have been raised to the use of the LSD procedure in testing differences between pairs of means, it is considered to be appropriate, provided the original F ratio comparing the groups of means is significant (Snedcor and Cochran, 1967). Findings at the 0.05 level were treated cautiously where there were marked inequalities of N and Bartlett's test of heterogeneity of variance was significant (pg. 123). Where continuous variables were involved in the analysis, groups were formed by splitting the population into four approximately equal groups, based on the interquartile ranges, or three groups, low and high quartiles with the two middle quartiles merged. Information has been tabulated in the text for results pertaining to the hypotheses and other findings of major interest. Other results which receive only brief mention in the text are set out fully in Appendix 5.

The Hypotheses

A summary of findings is contained in Table XXXIII.

Table XXXIII

Summary of findings on changes in sexual adjustment following childbirth

	Variables	Tables	Findings
A1	Good pre-pregnancy adjustment	XXXIV	Decline ($p<0.001$)
A2	Poor sexual relationship during pregnancy.	XXXV	Nil
B1	Anxiety a) Harm to foetus	XXXVI	Decline ($p<0.05$)
	b) Not reassured by screening	XXXVII	Decline ($p<0.05$)
	c) Problems with medical care	XXXVIII	Decline ($p<0.01$)
	d) Difficult baby	-	Nil
	e) Inadequate contraception	XXXIX	Decline ($p<0.025$)
B2	Depression a) Postpartum scores	XL	Nil
	b) Postpartum increase in scores	XLI	Decline ($p<0.01$)
C1	Caesarian Section	XLII	Decline ($p<0.025$)
	Longer labour	XLIII	Decline ($p<0.05$)
	Discomfort in labour as expected	XLIV	Decline ($p<0.01$)
C2	Breastfeeding less than 2 months	XLV	Decline (trend)
C3	Vaginal tension increased	XLVI	Decline ($p<0.001$)
	Exercises, nil and plus 17 weeks	XLVII	Decline ($p<0.025$)
	Pain in intercourse	XLVIII	Decline ($p<0.005$)
D1	Overcrowded accommodation	LI	Decline ($p<0.05$)
D2	Unplanned Pregnancy	LII	Decline (trend)
	Failed contraception	LIII	Decline ($p<0.01$)
D3	Association with marital relationship. a) Quarrelling	LIV	Decline (trend)
	b) Inattentiveness		Decline ($p<0.05$)
	c) Less sharing		Decline ($p<0.05$)
D4	Reduced social life	LV	Decline ($p<0.025$)
D5	Did not attend childbirth class	LVI	Decline ($p<0.005$)
	Advice on sex	-	Nil
	Tiredness in early postpartum	-	Nil

(i) Pre-existing Attitudes and Behaviour

a) Previous Sexual Behaviour. The analysis of the Sex Behaviour Scale (PQ4) on its first administration showed a highly significant tendency for high scorers on the first administration of the scale to show more negative change following childbirth (Table XXXIV). This finding is the opposite of that predicted in Hypothesis A1.

Table XXXIV

Sexual Behaviour before Pregnancy (SBS) and changes in SBS Scores

Ranges Pre-pregnancy Scores	N	Mean	S.D.
(-3 to 12)	23	-2.7	8.6
(13 to 16)	28	-3.5	5.3
(17 to 21)	27	-6.8	6.6
(22 to 32)	23	-10.9	9.2

$F = 5.99$, $p < 0.001$

LSD Significant Groups :

1. (-3 to 12) v (22 to 32)
2. (13 to 16) v (22 to 32)

It seems possible that more sexually active individuals with a high investment in sexuality run a greater risk of disruption of their sexual adjustment by pregnancy, childbirth and parenthood. An alternative interpretation is that pre-pregnancy estimates of sexual adjustment have been inflated, due to couples seeking to conceive, though it was hoped that the administration instructions would have minimised this problem. When a scale such as the SBS is re-applied to

the same group of subjects after an interval, regression to the mean would be expected, though theoretically this should affect both high and low initial scorers equally. The fact that low scorers also showed negative change and that the mean difference for the whole group was highly significant (Table XXV) argues against regression to the mean as an explanation of the observed changes.

b) Sexual Behaviour in Pregnancy. There was also a failure to confirm Hypothesis A2 that subjects who experienced a deterioration in their sexual relationship during pregnancy would show a greater deterioration in sexual adjustment postpartum (Table XXXV).

Table XXXV

Sexual relationship during pregnancy and postpartum adjustment (SBS scores)

Changes	N	Mean	S.D.
Improved	10	-5.8	7.7
None	40	-4.7	5.5
Deteriorated	51	-6.8	9.5

$F = 0.76$, p = n.s.

Although half the subjects felt that their sexual relationship had deteriorated during pregnancy and only approximately 10% felt it had improved, changes in sexual behaviour during pregnancy did not appear to be related to changes in sexual adjustment postpartum. This contrasts with the finding of a significant relationship between level of adjustment before pregnancy and sexual behaviour during pregnancy (Table XXX). Thus good sexual adjustment before pregnancy appears to provide some protection against deterioration in the sexual relation-

ship during pregnancy but increases the risk of deterioration in sexual adjustment postpartum. Levels of sexual adjustment before and after pregnancy were assessed by the Sex Behaviour Scale while changes in sexual behaviour during pregnancy were assessed by interview methods. This may partly account for the findings since the interview data involved global judgements and may be less reliable than the objective questionnaire, however, there was good agreement between global assessments of change postpartum and changes on SBS. A more probable explanation is that different factors influence sexual behaviour in pregnancy and the postpartum and that there exists a differential effect which depends upon the prior level of sexual adjustment.

ii) Emotional Factors

a) Anxiety. Although no direct questionnaire measure of anxiety was used the neuroticism scale of the MPI is considered to be related to "trait anxiety". Emotional disturbance at the time of assessment would be expected to inflate neuroticism scores. In fact there were no significant differences in N scores obtained during pregnancy and the postpartum and Eysenck's normative sample (Table XIII). Nor were there any significant relationships between neuroticism and extraversion scores and changes in sexual adjustment. The Pearson correlation coefficients of the difference scores, obtained from the ante-natal and follow-up administrations, with SBS scores were extremely low and insignificant (N, $r = -0.07$; E, $r = -0.03$). This suggests that changes in these personality variables and in particular the trait measure of anxiety do not set the conditions for changes in sexual behaviour postpartum.

The specific factor of fear of harming the foetus did show a significant relationship with changes in sexual adjustment postpartum (Table XXXVI).

Table XXXVI

Fear of harming the Baby and SBS scores

Fear of harming baby	N	Mean	S.D.
Yes	32	-8.5	7.7
No	69	-4.7	8.0

$F = 5.26, \quad p < 0.05$

Fears of harming the baby during intercourse were reported by almost a third of subjects or their husbands and this concern for the safety and viability of the foetus may also have been prompted by other factors. Medical investigations during pregnancy ranged from minor routine checks to major investigations, sometimes involving hospitalisation. The nature of the investigation itself did not seem to be a major determining factor in subsequent changes in sexual adjustment, but subjective individual reactions to the investigation were highly variable. This came out clearly in anecdotal fashion during the interviews and was also shown by the fact that where the effect of routine screening for foetal abnormality was to promote reassurance, there was significantly less negative change in sexual adjustment postpartum (Table XXXVII).

Table XXXVII

SBS Scores and Reaction to Screening

Reaction	N	Mean	S.D.
None	45	-6.8	9.5
Questionning	43	-6.6	6.1
Reassurance	13	-0.4	2.5

$F = 3.73$, $p < 0.05$

LSD Significant Groups

1. None v Reassurance.
2. Questionning v Reassurance.

In the case of amniocentesis most subjects appeared either not to have considered the consequences, or to have erected a barrier against consideration until such time as positive findings might force their hand. Subjects who had discussed the situation with their husbands and resolved upon termination, in the event of an abnormality being detected, showed somewhat less negative change in sexual adjustment postpartum. Whereas those subjects who had decided not to terminate the pregnancy, even if an abnormality were detected, showed much greater negative change in sexual adjustment. However, only two subjects were in this category and although a p value less than 0.05 was obtained the heterogeneity of variance requires cautious interpretation of the results. One subject greatly regretted that the investigation had been undertaken because it "ruined the rest of the pregnancy".

Health problems in the immediate postpartum period and length of time spent in hospital were not significantly related to later sexual adjustment. However, the group who spent more than nine days in hospital had higher negative change scores than other subjects and the difference between groups only narrowly failed to reach significance at the .05 level. Roughly one quarter of subjects felt that there had been some problem arising from their medical care in pregnancy, childbirth or the postpartum. The most commonly listed problems were insensitive handling, investigations and insufficient information. Although only two subjects felt that there had been anything more than temporary disturbance as a result of these problems, nevertheless, the occurrence of problems showed a significant relationship with changes in sexual adjustment (Table XXXVIII).

Table XXXVIII

SBS and Problems with Medical Care

Problems	N	Mean	S.D.
No	73	-4.4	6.89
Yes	28	-9.7	9.39

$F = 9.51$, $p < 0.01$

Serious problems with the baby were reported by six mothers and minor problems by a further 33 women. Despite this the overall perception of the babies was positive and there was no evidence from interview data or the analysis of the Baby Questionnaire (PQ6) that problems with the baby had any relationship to changes in sexual

adjustment. This finding was similar to that obtained in the Pilot Study.

Fear of a further pregnancy was reported by five women as the major factor influencing their sexual behaviour in the postpartum period. At the time of the follow-up interview eight subjects were using no form of contraception as they were already pregnant or hoping to become pregnant. The remainder were judged to have adopted a reliable method of contraception with the exception of six women who were relying on such methods as rhythm or withdrawal. These six showed greater negative change in sexual adjustment (Table XXXIX) and although there were quite small numbers in two groups Bartlett's test for heterogeneity of variance was not significant and the findings can be accepted with caution.

Table XXXIX

SBS Scores and method of contraception in the postpartum

Contraception	N	Mean	S.D.
None	8	-6.2	6.2
Sheath	21	-4.0	6.6
IUD	19	-5.2	6.1
Pill	47	-5.6	8.1
Other	6	-16.0	13.3

$F = 2.97, \quad < 0.025$

Thus Hypothesis 1, that anxiety during pregnancy or the postpartum would lead to a deterioration in sexual adjustment received some support from the findings on certain indirect measures, such as fear of harming the baby in intercourse, medical investigation and problems with medical care, and fear of a further pregnancy. Other specific factors such as problems with the baby and health problems did not show the expected effect and there was no link between neuroticism in pregnancy and the postpartum and sexual adjustment.

b) Depression. Scores on the Depression Questionnaire (PQ2) were obtained during pregnancy and the early and late postpartum. In addition subjective information was collected about depressed mood and treatment for depression in the postpartum. No relationships were found between depression scores in pregnancy and the early postpartum and later sexual adjustment. Similarly, although 25% of subjects reported mild depression in the early postpartum and a further 14% experienced more serious depressive symptoms, there were no significant differences in relation to sexual adjustment.

Roughly 40% of women reported some degree of depression in the later postpartum period, though only six had sought treatment from their General Practitioner and one from a psychiatrist. There was no significant association of treatment for depression with lower sexual adjustment, though the results were in the expected direction. There was also a trend for higher scorers on the Depression Questionnaire in the late postpartum to show more negative change in sexual adjustment though the results did not reach significance (Table XL). The correlation between late postpartum depression scores and SBS was small

but significant ($r = 0.20$, $p < 0.05$).

Table XL

SBS Scores and Depression Questionnaire Scores (PQ2) in the late Postpartum Period

Ranges PQ2 Scores	N	Mean	S.D.
(0 - 4)	25	-3.6	9.8
(5 - 9)	26	-4.7	6.2
(10 - 15)	25	-7.1	7.8
(16 - 40)	25	-8.2	7.3

$F = 1.81$, p = n.s.

Most subjects reported that their depressive episodes were brief and fluctuating. A number stated that they would have sought advice and treatment if the symptoms had continued over a longer period. In some cases there was a strong subjective association between depressive symptoms and delayed resumption of sexual activity. Sexual interest and satisfaction were also affected in these women over a longer period. Their reaction to sex was typically one of "couldn't be bothered" rather than aversion. These comments suggest that observed correlations between depressive symptoms and deterioration in sexual adjustment should be interpreted as implying a causal role to the mood changes rather than seeing the increase in depressive symptoms as a reaction to the deterioration in sexual adjustment.

The correlations between changes in depression scores and SBS are

shown in Table XLI. There was a trend for depression scores to drop from pregnancy to postpartum assessment and there was a small negative correlation between increased depression scores and sexual adjustment scores measured by SBS, i.e. increased depression scores were linked to poorer sexual adjustment. The correlation of the depression difference scores between early and late postpartum administrations with SBS was significant at the 0.01 level. These results support Hypothesis B2 and suggest that depression plays a part in determining changes in post-partum sexual behaviour, though the role does not appear to be as crucial as has sometimes been suggested.

Table XLI

Correlation of Depression Questionnaire (PQ2) Difference Scores with SBS

Comparison	r	Sig. level
Phase II - Phase I	0.02	n.s.
Phase III - Phase I	-0.16	$p<0.05$
Phase III - Phase II	-0.23	$p<0.01$

iii) Physical Factors

a) Labour and Childbirth. The presence of complications in the delivery period narrowly failed to reach significance at the 0.05 level in relation to subsequent negative changes in sexual adjustment. The ten subjects who underwent Caesarian Section deliveries obtained significantly higher negative change scores postpartum (Table XLII).

Table XLII

SBS Scores and Caesarian Section

Caesarian	N	Mean	S.D.
Yes	10	-11.7	11.8
No	91	- 5.2	7.3

$F = 6.21, \quad p < 0.025$

The length of labour showed a complex relationship with sexual adjustment in that groups with comparatively short labours of under 4 hours and longer labours of more than 9 hours showed more negative change than intermediate groups (Table XLIII). The short labour group included most of the subjects who underwent a Caesarian section and it has already been noted that this group had significantly higher negative change scores. However, when this group were removed from the analysis the statistical difference between the long labour group and the shorter labour groups remained significant. On this basis it seemed reasonable to conclude that labours in excess of 9 hours were significantly associated with greater reductions in sexual adjustment postpartum.

Table XLIII

SBS Score and Length of Labour

Time in Labour (hrs)	N	Mean	S.D.
(0 - 4)	18	-7.1	10.1
(5 - 6)	42	-4.4	7.3
(7 - 8)	20	-3.6	6.2
9+	21	-10.0	7.6

$F = 3.18$, $p < 0.05$

LSD Significant Groups :

1. (5 - 6) v (9+)
2. (7 - 8) v (9+)

There was no significant difference with episiotomy though there was a tendency for the group without episiotomy to have higher mean negative change scores. The findings for subjective reaction to the experience of childbirth are difficult to interpret as there was no significant difference between those groups judging childbirth to be a pleasant or unpleasant experience. The greatest negative change was shown by a group of women reporting no reaction. Again this finding could have arisen because a high proportion of the no reaction group underwent Caesarian section deliveries. Reactions to the level of discomfort experienced in childbirth are also difficult to interpret as the group whose expectations were matched by events showed significantly higher negative change scores than the groups who judged the experience to be easier or worse than expected (Table XLIV). Labour and childbirth are

confirmed as important variables in understanding changes in sexual adjustment postpartum, though the relationship is a complex one and the simple proposition contained in Hypothesis C1 does not provide an adequate explanation.

Table XLIV

SBS Scores and expectations of discomfort in Labour/Delivery

Discomfort	N	Mean	S.D.
As expected	26	-10.0	9.1
Easier	36	-4.9	6.2
Worse	39	-4.0	7.9

$F = 5.18$, $p < 0.01$

LSD Significant Groups

1. (expected) v (easier)
2. (expected) v (worse)

b) Breast feeding. Almost three-quarters of subjects carried out some breast feeding and a half continued to do so for more than eight weeks. The group who gave up breast feeding in the first seven weeks showed higher mean negative change scores than both the group who chose not to breast feed and the successful group who fed for more than eight weeks. This finding just failed to reach significance at the .05 level (Table XLV), and thus provides some weak support for Hypothesis C2. This point is reinforced by the analysis of the reactions to breast feeding. The group who were disappointed at being unable to breast feed successfully showed higher negative change scores, though this finding

did not reach significance. There was no significant relationship between sexual adjustment and husbands' reactions to their wives breast feeding.

Table XLV

SBS Scores and length of time Breast Feeding

Time breast feeding (weeks)	N	Mean	S.D.
Nil	29	-5.0	5.7
(0 - 7)	20	-9.6	9.5
8+	52	-4.9	8.2

$F = 2.81$, p = n.s.

A large proportion of women who rejected breast feeding did so because of negative psychological reactions to the biological function involved. This was sometimes expressed in terms of disgust or embarrassment. One subject likened herself to a "milk cow" and another spoke of the infant as "a little animal". The link between such attitudes and prudishness in sexual behaviour seems superficially obvious but subjects' comments suggested that the relationship may be complex. Some subjects who reported negative reactions to breast feeding appeared to have very positive attitudes to their own sexuality.

c) Vaginal Tension and Dyspareunia. There were no significant relationships between length of vaginal discharge or delayed resumption of menstruation and SBS Scores. Changes in vaginal tension,

however, were highly significant (Table XLVI). The group of 21 subjects who experienced tightness on resuming intercourse showed significantly higher negative change scores than the group who reported no change or greater laxity. Practising restorative exercises had a complex effect upon later sexual adjustment. Subjects who did not practise exercises, or who continued to practise them beyond four months, showed significantly higher negative change scores than groups who practised exercises for between one and four months (Table XLVII). This suggests that problems may arise in those individuals who do not practise restorative exercises. Additionally the fact that some individuals continue to practise exercises beyond four months may be a sign that they are experiencing continuing problems.

Table XLVI

SBS Scores and changes in Vaginal Tension

Vaginal tension	N	Mean	S.D.
No change	48	-3.9	7.2
Tighter	21	-11.5	9.5
Slacker	32	-5.2	6.4

$F = 7.67$, $p < 0.001$

LSD Significant Groups

1. (no change) v (tighter).
2. (slacker) v (tighter).

Table XLVII

SBS Scores and length of practise of Restorative Exercises

Exercises (weeks)	N	Mean	S.D.
Nil	22	-8.6	6.4
(1 - 3)	34	-3.1	7.8
(4 - 16)	26	-5.0	6.6
17+	19	-8.8	10.1

$F = 3.42$, $p < 0.025$

LSD Significant Groups

1. (nil) v (1 - 3)
2. (1 - 3) v (17+)

The timing of resumption of intercourse after the birth did not significantly affect later sexual adjustment, though the presence of pain on resumption (Table XLVIII) showed a highly significant relationship with lower sexual adjustment. Although improvement in pain led to lower negative changes (Table XLIX) the significant difference remained between those who experienced no pain on resumption and those who experienced some pain even when this improved. The group who had shown no improvement in their dyspareunia showed the most deterioration in sexual adjustment at follow-up. The results concerning the physical factors of vaginal tension, dyspareunia and postnatal exercises provide strong confirmation of Hypothesis C3.

Table XLVIII

SBS Scores and presence of pain on resuming Intercourse

Pain on resumption	N	Mean	S.D.
Yes	55	-8.0	8.0
No	46	-3.3	7.2

$F = 9.21$, $p < 0.005$

Table XLIX

SBS Scores and improvement of pain in Intercourse

Improvement of Pain	N	Mean	S.D.
No pain	46	-3.3	7.2
Improved	42	-7.6	8.2
No improved	13	-9.2	7.4

$F = 4.79$, $p < 0.025$

LSD Significant Groups

1. (no pain) v (improved).
2. (no pain) v (not improved).

(iv) Social and Environmental Factors

When women in the older age group were compared with the younger age groups, the older women showed significantly less negative change in sexual adjustment (Table L). This may simply reflect the fact that older subjects have a more stable level of sexual adjustment which is less sensitive to any new factor which may influence the relationship.

Table L

SBS Scores by Age (women)

Age Ranges	N	Mean	S.D.
(19 - 24)	24	-7.8	7.9
(25 - 29)	54	-6.5	8.3
(30 - 36)	23	-2.4	6.7

$F = 3.22, \quad p < 0.05$

LSD Significant Groups

1. (19 - 24) v (30 - 36)
2. (25 - 29) v (30 - 36)

There were no significant differences in SBS Scores in relation to place of birth, religion, education, occupation or length of marriage. Social class differences were not apparent though the distribution was skewed with social classes IV and V under-represented. No differences emerged in relation to number of previous pregnancies, abortion or abnormal births, though the numbers in some groups were very small and a more specialised study would be needed before these factors could be

completely eliminated. As in the pilot study there was a tendency for primiparous women to show more negative change in sexual adjustment than parous subjects though the results were not statistically significant.

a) Accommodation. Although there was no significant difference between type of accommodation and SBS Scores there was a significant difference when size of accommodation was considered (Table LI). This factor appeared to be most important where accommodation was considered over-crowded and families occupying two apartment homes showed much greater negative change than all other groups. One subject commented that lack of privacy had seriously affected her ability to "let go" and although previously orgasmic she had not experienced orgasm in the postpartum period. The numbers in this group were small compared with other groups, though Bartlett's test for heterogeneity of variances was not significant, so that although the results require cautious interpretation they do provide support for Hypothesis D1.

Table LI

SBS Scores by Size of Accommodation

Size	N	Mean	S.D.
Two apt.	4	-16.8	4.3
Three apt.	47	- 6.1	7.9
Four apt.	24	- 4.2	5.7
Five apt.	13	- 6.6	10.9
Six + apt.	13	- 3.9	7.2

$F = 2.49$, $p < 0.005$

LSD Significant groups

1. two apt. v all.

b) Unplanned Pregnancy. The difficulty encountered in the pilot study of establishing the planned or unplanned nature of the pregnancy was confirmed in the main study. Although there was a trend for unplanned pregnancies to lead to greater negative change, this failed to reach significance, (Table LII). There were also no significant differences in relation to husbands and wives subjective reactions to the pregnancy. However, when the more stringent test of "no contraception" versus "failed contraception" was employed, the smaller group who might be considered the "true" unplanned pregnancy group showed significantly more negative change than the group who were not taking contraceptive precautions, (Table LIII). The group not using contraception were usually attempting to conceive. The group sizes in Table LIII differ markedly and Bartlett's test indicates a significant difference between the variances, nevertheless, as the difference on SBS is significant at the 0.01 level we can accept it with caution as support for Hypothesis D2.

Table LII

Planned v Unplanned Pregnancy and SBS Scores

Planned	N	Mean	S.D.
Yes	76	-5.1	7.0
No	25	-8.2	10.3

$F = 2.76$, $p = n.s.$

Table LIII

SBS Scores and the Use of Contraception at Conception

Contraception	N	Mean	S.D.
Yes	8	-12.9	12.7
No	93	- 5.3	7.2

$F = 7.08$, $p = <0.01$

c) Marital Relationships. In addition to the results obtained from the two administrations of the Marital Interaction Questionnaire subjects were asked to indicate whether they felt their marital relationship had improved, remained the same or deteriorated after the birth of the baby. A little over 40% of women felt that their general marital relationship had not changed and a similar proportion felt that it had improved, mainly in the direction of increased closeness. Roughly 18% of subjects indicated that there had been some deterioration in their marital relationship, mainly less time for each other, but there was no significant association with sexual adjustment.

The correlations of the Marital Scales derived from the Marital Interaction Questionnaire with SBS Scores are shown in Table LIV.

Table LIV

Correlations of Marital Scales (PQ3) with SBS Scores

Scales	MS1	MS2	MS3	MS4	MS5	MS6	MS7	MS8
SBS	-0.14 p=n.s.	-0.01 p=n.s.	-0.06 p=n.s.	-0.18 p<0.05	0.01 p=n.s.	0.46 p<0.001	-0.05 p=n.s.	0.19 p<0.05

The Marital Scales dealing with sharing (MS2), disharmony arising

from external relationships (MS3), hostility (MS5), and helpfulness (MS7), were uncorrelated with changes in sexual adjustment postpartum. Small correlations were obtained between increased quarrelsomeness (MS_1), greater inattentiveness (MS4), and a reduction in shared activities (MS8), with lowered sexual adjustment. The correlations with MS4 and MS8 were significant and the correlation with MS_1 just failed to reach significance at the .05 level. A much larger correlation was observed between MS6 and lower sexual adjustment which was not surprising as this scale is concerned with sexual attractiveness and a positive approach to sex. This highly significant correlation provided additional support for the validity of the questionnaire measure employed in the assessment of sexual adjustment (Pg. 148).

Thus Hypothesis D3 received some support from these findings, though the magnitude of the relationships was small. It seemed reasonable to infer that small changes in quarrelsomeness and inattentiveness would be expected as the consequence of a deterioration in the sexual relationship. There was no evidence that deterioration in marital relationships was either a major cause or effect of changes in sexual adjustment.

d) Social Life. Almost half of the subjects reported that their life was more complicated following the birth of the baby and a quarter that they had become home centred. However, these changes were not significantly related to changes in sexual adjustment. A little over a third of subjects reported a marked reduction in their social lives and this was significantly related to a deterioration in sexual adjustment (Table LV) which provides good support for Hypothesis D4.

Table LV

SBS Scores and changes in Social Life

Social Life	N	Mean	S.D.
Little change	65	-4.4	6.9
Markedly reduced	36	-8.5	9.1

$F = 6.20$, $p < 0.025$

Under one half of the women felt that they had maintained their interests or hobbies outside the home, though a similar number reported that they had never had any major interests outside the home before the pregnancy. A quarter of subjects were either already in employment or expecting to commence either part-time or full-time employment within a few months. These women showed somewhat higher mean negative change scores, though the finding was not significant.

e) Advice and Support. The subjects generally expressed a high level of satisfaction with the ante-natal care they received. Problems with medical care have already been reported (Pg. 171), and it was noted that those subjects who experienced problems showed significantly more deterioration in sexual adjustment postpartum. However, most "problems" arose from anxiety about investigations and there were very few complaints about actual care. The latter were chiefly concerned with insensitivity and lack of information.

The majority of subjects attended childbirth classes or were ineligible to do so because they had already attended in connection

with a previous child. A small number of parous subjects attended mothercraft and relaxation classes organised on a private basis outside the N.H.S. The women who were eligible to attend the N.H.S. childbirth classes but did not do so showed much greater negative change in sexual adjustment postpartum than the other groups (Table LVI). Although Bartlett's test was just significant at the 0.05 level, the level of significance obtained from the overall analysis suggests that we can interpret the findings with caution.

Table LVI

Attendance at Childbirth Classes and SBS Scores

Childbirth Class	N	Mean	S.D.
Yes	57	-5.5	7.6
No	8	-15.0	11.9
No - 2nd Child	36	- 4.5	6.2

$F = 6.45$, $p < 0.005$

LSD Significant Groups

1. no v yes.
2. no v 2nd child.

The role of advice in influencing sexual behaviour during pregnancy and the postpartum was difficult to ascertain as 90% of the subjects interviewed received no systematic advice from a professional person. Although the numbers were very small there was a tendency for subjects who had received advice from General Practitioners to have higher negative change scores, whereas those who received advice from

Obstetricians or Midwives had slightly positive change scores. It seems possible that women who sought advice from Obstetricians or Midwives may have done so in pregnancy or the early postpartum concerning positions for intercourse, date of resumption of intercourse or contraception. Whereas, women seeking advice from G.P.'s may have done so later when they were experiencing problems. This explanation is of course entirely speculative.

Help at home immediately after the birth was available to almost 60% of women and they tended to show less deterioration in sexual adjustment though the results were not significant. Major events occurring in the life of the family, such as a move of house or serious illness, had no significant effect upon sexual adjustment. Roughly 20% of families had moved house following the birth, the main reason given was the inadequate size of existing accommodation after an addition to the family. For some women there was a reported link between house move, excessive tiredness and lack of interest in sex. A number of subjects were clearly surprised that they experienced difficulty in coping with major upheavals in their domestic circumstances at this time. They subsequently recognised that they had made insufficient allowance for the time required to completely regain their former energy and activity levels. These results provide rather weak support for Hypothesis D5 though there was evidence that non-attendance at childbirth classes is linked with deterioration in sexual adjustment and anecdotal confirmation that tiredness and lack of energy affect interest in sex, especially in the early postpartum.

The Extreme Group

The questionnaire responses of the five individuals who showed the greatest negative change in sexual adjustment on SBS were compared with

the rest of the sample. The group had an average age of 27.8 years, compared with 27 for the sample as a whole, and the birth represented a first baby for two subjects and a second baby for the other three. The social class groupings were similar to those found in the total sample, with two from social class I, one from social class II and three from social class IV. Two of the subjects had a history of previous abortion.

All five subjects had experienced some degree of postpartum depression, which ranged from mild to severe, though none of the subjects had consulted a doctor. The depression typically ran a fluctuating course with periods of depression generally lasting no longer than a few days, with longer periods of relief in between. The group were also characterised by problems during pregnancy and four of them had experienced disturbance due to physical problems and the necessity for medical investigations. Labour was experienced as much more painful and unpleasant than expected in two cases, and one of the remaining subjects underwent a Caesarian section.

Difficulties with breast feeding were also noted in this group. Two had chosen not to breast feed, in one case because of difficulties following the previous pregnancy, one had breast fed beyond eight weeks though with considerable difficulty, and two had given up breast feeding after a trial period. The reasons given for the difficulties varied, though general stress factors seem to have been important as well as psychological reactions to the experience. Three subjects had moved house shortly after the birth, and this had led to extended periods of tiredness, tension and strain. A further subject had problems with her alcoholic mother which intensified in the postpartum period. Finally,

marked changes in sexual behaviour during pregnancy also characterised this group. In two cases, the frequency of sexual activity had fallen to zero early in the pregnancy and had remained at that level throughout the pregnancy. In the remaining cases, loss of interest occurred in the second trimester and was less severe.

There were close similiarities between the "extreme group" and the remainder who showed milder negative changes in sexual adjustment postpartum. The reasons given for negative change were similar and there seemed to be a quantitive rather than a qualitative difference. Even the subjects showing the greatest negative change in sexual adjustment did not generally regard themselves as having a "sexual problem", at the time of interview, although one couple had already sought professional help for their sexual difficulties. There seemed to be a tendency towards ready acceptance of the new pattern of sexual functioning by most women. Where dissatisfaction was mentioned changes were seen as a temporary, if somewhat protracted, consequence of having children.

Summary

There was a highly significant drop in sexual adjustment scores following childbirth on SBS. At the follow-up interview roughly 20% of subjects felt that their sexual relationship had shown a marked deterioration and a further 20% felt that there had been a slight deterioration. An important finding was that subjects with higher levels of adjustment before pregnancy experienced a more marked deterioration in sexual adjustment in the postpartum. Sexual behaviour during pregnancy was not related to subsequent sexual adjustment, though anxieties about harming the foetus during intercourse were associated with deterioration postpartum. Anxiety generated by medical investigations and fear of

pregnancy was also linked to postpartum sexual adjustment. The incidence of mild depressive symptoms was high in the postpartum though few subjects had sought treatment. Although in general depression scores tended to fall in the postpartum, increased scores were associated with deterioration in sexual adjustment. Complications of delivery, Caesarian section and longer labour were linked with changes in sexual adjustment and there was a non-significant tendency for women who had discontinued breast feeding within the first two months to show more negative change than women who had never breast fed or who had breast fed successfully beyond two months. Increases in vaginal tension, the experience of pain on resuming intercourse and failure to practise restorative exercises were related to greater negative change in sexual adjustment. There was also some evidence that social factors such as overcrowding, unplanned pregnancy, inadequate support and reduced social life played a part in affecting postpartum sexual adjustment. However, there was no evidence that changes in the marital relationship made an important contribution to the decline in sexual adjustment. The small group who showed the largest amount of negative change in sexual adjustment postpartum appeared to be quantitatively rather than qualitatively different from the majority.

CHAPTER IX

PREDICTORS

The significant variables and those showing strong trends from the three phases of the investigation, were combined together in an attempt to establish predictors of practical utility in the clinical situation. Each phase was dealt with separately to establish the best combination of variables arising from that part of the investigation. Variables from Phases I and II were then combined to establish the best joint predictors at a point approximating to the six week post-natal check-up. Finally, all significant variables were combined to establish the best group of predictors available in relation to changes in sexual adjustment postpartum.

A series of multiple regression analyses were carried out using the step-wise procedure of the SPSS Regression Program. The F-level for inclusion was set at 1.5 for each step of the regression procedure in order to restrict the inclusion of new variables to those which would add significantly to the proportion of variance accounted for. Tables LVII to LXI show the multiple correlation coefficients (Mult. R), the cumulative proportions of variance accounted for (R^2) and the proportion of new variance contributed by each variable (R^2 change).

Table LVII

Multiple Regression of Phase I Variables

Order of Inclusion of Variables	Mult. R	R^2	R^2 Change
1. Original sex behaviour	0.40	0.16	0.16
2. Contraception (pre)	0.48	0.23	0.07
3. Fear of harming baby	0.55	0.33	0.07
4. Childbirth classes	0.59	0.34	0.04
5. Parity	0.61	0.38	0.03
6. Reaction to investigations	0.64	0.41	0.03
7. Advice about sex	0.65	0.42	0.01

$F = 9.57, \quad p = 0.01$

Table LVII shows that seven variables from Phase I of the study accounted for 42% of the total variance. The best prediction of negative change in sexual adjustment postpartum was obtained from a high initial level of sexual behaviour, failed contraception, fear of harming the baby during intercourse, non-attendance at childbirth classes, first pregnancy, emotional disturbance caused by medical investigations and lack of appropriate advice about sexual behaviour during pregnancy.

Table LVIII

Multiple Regression of Phase II Variables

Order of Inclusion of Variables	Mult. R	R^2	R^2 Change
1. Pain on intercourse	0.29	0.09	0.09
2. Caesarian	0.40	0.16	0.07
3. Help at home	0.46	0.21	0.05
4. Discomfort (childbirth)	0.48	0.23	0.02
5. Length of labour	0.51	0.26	0.03
6. Vaginal tension	0.52	0.27	0.01
7. Complications	0.53	0.28	0.01

$F = 5.29$ $P = 0.01$

The variables from Phase II of the investigation which accounted for 28% of the total variance are shown in Table LVIII. The best prediction of a negative change in sexual adjustment was obtained from the presence of pain on resuming intercourse, Caesarian-section delivery, a lack of help in the home during the postpartum period, an expectation of discomfort in childbirth, labour in excess of 9 hours, increased vaginal tension and complications during the delivery period.

Table LIX

Multiple Regression of Phase III Variables

Order of Inclusion of Variables	Mult. R	R^2	R^2 Change
1. Time to stabilise	0.34	0.12	0.12
2. Effect of medical problems	0.44	0.20	0.08
3. Contraception (post)	0.47	0.22	0.03
4. Social life	0.49	0.24	0.02
5. Energy	0.50	0.25	0.01

$F = 6.46, \quad P = 0.01$

Table LIX shows that the Phase III variables accounted for 25% of the total variance. The best prediction of negative change in sexual adjustment was obtained from stabilisation of sexual behaviour later than 25 weeks postpartum, emotional disturbance due to problems with medical care, inadequate contraception following the birth, more restricted social life and lower energy levels.

Table LX

Multiple Regression of Phase I & II Variables Combined

Order of Inclusion of Variables	Mult. R	R^2	R^2 Change
1. Original sex behaviour	0.40	0.16	0.16
2. Contraception (pre)	0.48	0.23	0.07
3. Fear of harming baby	0.55	0.30	0.07
4. Improvement in pain	0.59	0.34	0.04
5. Childbirth classes	0.63	0.39	0.05
6. Parity	0.65	0.42	0.03
7. Caesarian	0.67	0.45	0.03
8. Reaction to investigations	0.69	0.48	0.03
9. Vaginal tension	0.70	0.50	0.02
10. Pain on intercourse	0.71	0.51	0.01

$F = 9.33 \quad P = 0.01$

Table LX shows that a combination of Phase I and Phase II variables was able to account for 51% of the total variance of SBS change. Phase I variables were responsible for five out of the first six inclusions in the regression equation. Improvement of pain on intercourse was the only Phase II variable which entered the top six. Only an additional 9% of total variance was achieved by combining

Phase I and II variables, and this encourages the view that identification and intervention during pregnancy may be beneficial. The major benefit being that women are much more accessible for counselling during pregnancy than in the postpartum period.

Table LXI

Multiple Regression of Variables from all Phases

Order of Inclusion of Variables	Mult. R	R^2	R^2 Change
1. Original sex behaviour	0.38	0.14	0.14
2. Time to stabilise	0.57	0.32	0.18
3. Contraception (pre)	0.64	0.40	0.08
4. Improvement in pain	0.67	0.45	0.05
5. Caesarian	0.70	0.49	0.04
6. Reaction to investigations	0.72	0.52	0.03
7. Effect of medical problems	0.74	0.55	0.03
8. Time breast feeding	0.75	0.56	0.02
9. Contraception (post)	0.76	0.58	0.02
10. Childbirth classes	0.77	0.59	0.02
11. Adjustment problems	0.78	0.61	0.01
12. Vaginal tension	0.79	0.62	0.01
13. Complications	0.79	0.63	0.01
14. Parity	0.80	0.64	0.01

$F = 10.69 \quad P = 0.01$

The combination of all significant variables from the three phases of the study made it possible to account for 64% of the variance (Table LXI). Variables from each phase of the study contributed to the prediction equation and two new variables entered the analysis. This finding implicated breast feeding for a period of under eight weeks, and anxiety or depression (Adjustment problems) in the later puerperium, with negative changes in sexual responsiveness.

The multiple regression analysis served two major functions. Firstly, it allowed an assessment to be made of the relative importance of significant variables in explaining the variance associated with Sex Behaviour Scale scores. Secondly, the regression analysis permitted the creation of prediction equations which should prove useful in identifying subjects 'at risk' and facilitate the provision of preventative measures. This would be particularly useful if variables could be determined during pregnancy, or in the early postpartum period prior to the post-natal check-up. In order to increase the utility of the predictive and descriptive functions, variables which were not 'naturally occurring' such as questionnaire scores were omitted from the analysis. As a result, the predictors should be capable of routine application to data normally collected from patients at ante-natal clinics.

Summary

Predictive indices, potentially of value in the clinical situation, were developed from variables derived from the three phases of the investigation. Variables were also combined to yield pre-

dictors in relation to the sampling point of the 6 week post-natal check-up. Variables derived from all phases of the investigation, with the exception of specialist questionnaire variables, were combined in a final analysis to identify the relative contributions of different factors to change in postpartum sexual adjustment.

CHAPTER X

DISCUSSION OF RESULTS AND CONCLUSIONS

The overall aims of this study have been achieved. Changes in sexual behaviour during pregnancy and the postpartum period have been monitored in an unselected sample of subjects drawn from the Lothians Region of Scotland, using interview methods and objective questionnaires within a prospective framework. Unfortunately, the sample cannot be considered completely representative as there was a bias towards higher social-class groups. This was largely unavoidable due to the population characteristics of the catchment area of the hospital in which the study was conducted. A further contributing factor to the social class bias may have been the exclusion of out-of-wedlock pregnancies, which can account for as many as one-third of all first pregnancies; with a disproportionate number of these subjects being of lower socio-economic status (Freiberg and Bridwell, 1975). Similar difficulties were encountered by Solberg et al (1973) in their study conducted in the Seattle area, and although Baxter (1972) achieved a more balanced population, bias still occurred. In the latter study almost one-third of subjects conceived pre-maritally, despite an attempt to exclude out-of-wedlock conceptions. Thus, subjects who married early in pregnancy were included in the study, while individuals who remained unmarried, or married later in the pregnancy, were excluded. There appears to be no obvious way of overcoming this difficulty in relation to primiparous subjects since it is essential to have a stable level of pre-pregnancy sexual adjustment against which changes can be measured. Social class bias towards higher educational level and socio-economic status has occurred in

most major studies in this field (Kinsey et al, 1953; Masters and Johnson, 1966; Falicov, 1973).

The interview schedules and questionnaires were remarkably favourably received by the subjects, and their acceptability in this sensitive area can be judged by the very low drop-out rate from the study. This study was concerned with explicitly sexual aspects of the marital relationship, though attempts were made, through the Marital Interaction Questionnaire and the interviews, to explore the wider emotional context of the relationship. The reliability and validity of the Marital Interaction Questionnaire require careful consideration. The questionnaire was designed to sample a wide range of marital interaction and to be relatively sensitive to change. It is, therefore, difficult to be certain whether differences after a year reflect poor reliability or real changes in the marital relationship. Nevertheless, the changes were in the expected direction and the marital scales derived from the factor analysis of the difference scores appeared to be psychologically meaningful and of acceptable reliability of the internal consistency type. The only scale which could be directly compared with an alternative measure showed a close correspondence. Future studies in this area will have the advantage of being able to employ more recently developed instruments, such as the Dyadic Adjustment Scale developed by Spanier (1976), which are known to be of acceptable reliability and validity.

Sexual adjustment is a global concept which has many contributing components. No single variable such as frequency of intercourse or coital orgasm rate (Baxter, 1972) can be considered sufficient on its own. However, where researchers have used more comprehensive

concepts of sexual adjustment (Nilsson and Almgren, 1970) the definitions have lacked specificity in terms of actual sexual behaviour. The items in the Sex Behaviour Scale were chosen for their content validity and relevance to the concept of "sexual adjustment" as a process phenomenon involving subjective evaluation of current sexual functioning (pg. 118). The factor analyses of the scores from the two administrations and the difference scores yielded stable factors which were psychologically meaningful. Seven scales were derived from the factors and named tentatively as follows : Satisfaction, Distaste, Husband's Satisfaction, Excitement, Difficulty in Responding, Interest and Tension-Discomfort. The first factor, which was concerned largely with satisfaction with the sexual relationship, accounted for 23% of the common variance and correlated 0.86 with total score. It was decided that total score provided a satisfactory approximation to the concept of sexual adjustment developed for this study. Reliability coefficients were calculated for the two administrations using Cronbach's Alpha and coefficients of 0.84 and 0.88 respectively were obtained. The validity of the total SBS score was assessed by reference to subjective judgements of changes in frequency, interest and satisfaction obtained at the final interview. Table XXVII shows that highly significant relationships with SBS were obtained for these measures. In addition the ratings were combined to produce an index of change in sexual adjustment which was then compared with SBS scores and resulted in a validity coefficient of 0.64 ($p<0.001$). A further validity check was provided by comparison of SBS scores with the factor scale measure of sexual attraction and interest in sex obtained from the Marital Interaction Questionnaire, where a correlation of 0.46 ($p<0.001$) was observed. Thus, although the dangers inherent in the use of an

ad hoc unstandardised scale were noted, it was felt that the present scale had demonstrated acceptable reliability and validity. The development of a brief, standardised scale appropriate for use with the general population would greatly assist research in this area.

Sexual Behaviour During Pregnancy

(i) Pattern of Sexual Behaviour

There was no universal pattern of sexual behaviour during pregnancy and, as predicted, subjects showed a variety of different patterns. Some subjects manifested complete loss of sexual interest throughout the pregnancy, while others reported that pregnancy had virtually no effect, and a small number felt that their sexual adjustment had improved compared with before pregnancy. A much greater proportion of subjects reported decreases in sexual enjoyment, especially in the first trimester, than reported lower frequency of sexual activity and decreased sexual interest.

There was no evidence of a steady decline in sexual activity throughout the pregnancy as reported in many earlier studies (Landis et al, 1950; Solberg et al, 1973; Pasini, 1972; Lukesch, 1976; Tolor and DiGrazia, 1976; and Morris, 1975), nor was there evidence of a major improvement in sexual functioning beyond pre-pregnancy levels as reported by Masters and Johnson (1966). Difficulties may arise for some subjects in judging relative changes in sexual activity during pregnancy against normal levels before pregnancy. Thus some subjects may report absolute improvement in the second trimester when in fact there has only been a marked relative improvement compared with first trimester sexual functioning.

The general decline in sexual activity in the third trimester predicted in Hypothesis 1 was not observed though there was some individual variation. Roughly 17% of subjects had ceased intercourse before

entering the third trimester. However, a little over 50% were still having intercourse in the last seven weeks of the pregnancy and a quarter continued to have intercourse in the final three weeks. Reasons given for discontinuing intercourse were postural discomforts, fatigue, a fear of harming the foetus and loss of interest. The fact that a steady decline has been reported so often in retrospective studies suggests that there may be a recency effect with subjects giving undue weight to the decline in activity which occurs towards the end of the pregnancy.

(ii) Primiparous versus Multiparous Subjects

The predicted differences between primiparous and multiparous subjects in their patterns of sexual response during pregnancy could not be demonstrated in this study. Slightly more primiparous subjects reported a deterioration in their sexual adjustment in the first trimester, though the pattern of change was similar for both groups. Table XXIX shows that there were no differences between the nulliparous and parous subjects in terms of their overall evaluation of their sexual adjustment during pregnancy. Thus, both Hypothesis 2 and Hypothesis 3 received some support in terms of the sexual behaviour of all pregnant subjects, though there were no differences due to parity. Typically, there were decreases in all aspects of sexual functioning in the first trimester, especially sexual enjoyment, with a tendency to improvement in the second and third trimesters, followed by an abrupt decline in the final weeks of the pregnancy. This pattern has been found for a majority of subjects in a number of previous studies (Masters and Johnson, 1966; Falicov, 1973; and Glenc, 1973) and in a recent British study (Robson, 1979).

Most earlier studies emphasised the importance of physiological disturbances and tiredness in diminishing sexual activity in the first trimester, and the present study provides additional confirmation of these observations. The role of the husband in influencing the pattern of sexual activity during pregnancy has been less well recognised, though Pasini (1972) noted that half of the husbands had reduced the frequency of intercourse, either on their own initiative, or, following discussion with their wives. There was some anecdotal evidence from the present study to support this view. Particularly noted were husbands' anxiety about harming the foetus, reactions to foetal movements, and the presence of a "third person"; one husband had commented to his wife that "it was like having someone else in the room watching you make love". A minority of husbands also appeared to lose sexual interest in their wives because they found the large abdomen unattractive, and a few reacted negatively to their wife breast feeding the infant.

(iii) Previous Sexual Adjustment

It was predicted in Hypothesis 4 that women with relatively lower levels of sexual adjustment before pregnancy would be more likely to show deterioration in their sexual adjustment during pregnancy. Table XXX shows that there was a highly significant tendency for subjects who reported a deterioration in sexual adjustment during pregnancy to have relatively lower levels of sexual adjustment before pregnancy, as measured by the Sex Behaviour Scale. The small number of subjects who reported improvements in their sexual adjustment during pregnancy had the highest levels of sexual adjustment before pregnancy. This contrasts with the finding of Landis et al (1950)

that women who reported that pregnancy favourably affected their sexual behaviour, had relatively poorer pre-pregnancy sexual adjustment. In a more recent study, Lukesch (1976) reported that women with a high level of sexual activity before pregnancy tended to be more sexually active throughout pregnancy. He also found that couples with poor general relationships showed a greater decline in sexual activity during pregnancy.

Falicov (1973) noted that women low in sexual responsiveness prior to pregnancy tended to show similar or lower levels of sexual adjustment during pregnancy. The author considered that similar physical and psychological factors were affecting the majority of women when they experienced decreased sexual adjustment, but that women who had a lower investment in sexuality may have used discomforts and fears during pregnancy as a way of avoiding sex. This theory receives some support from the findings of the present study, particularly in the comments of those subjects who showed an early decline in sexual activity: e.g."I felt sick and tired and was glad of the excuse not to have sex; my husband always seems to want it more often that I do".

(iv) Anxiety over harm to the Foetus

Although a number of subjects reported that either they or their husbands had felt concern over possible harm to the foetus there was no relationship with sexual adjustment in pregnancy (Table XXXI). A small number of women had been advised, or considered it appropriate, to abstain from intercourse in the first trimester, as they had a history of early abortion. Prochazka and

Cernoch (1970) considered that primiparous women were more likely to allow anxieties about harm to the foetus to affect their sexual behaviour during pregnancy and Pasini (1972) noted that husbands were also likely to reduce sexual activity for the same reasons. The tendency for medical counter-indications to reduce sexual activity in the final weeks of the pregnancy has been commented upon by Masters and Johnson (1966) and Falicov (1973). Few women reported such an effect in the present study, possibly due to different medical attitudes in Britain regarding the advisability of abstaining from intercourse in the latter stages of the pregnancy. However, it should be noted that relatively few women had sought or been offered advice about sexual behaviour during pregnancy, though a larger number had gleaned information from books.

There are obviously considerable differences between the relatively mild anxieties described above and clinical anxiety states or depression. Anxieties about producing an abnormal child or experiencing pain or injury are very common (Heymans and Winter, 1975). Though even where these fears are particularly strong, as in the case of women who have experienced a previous miscarriage, there is usually no association with clinical assessment of anxiety or depression (Kumar and Robson, 1978). A tendency for depression scores to fall in the postpartum period compared with pregnancy was noted, though the tendency was not significant when pregnancy was compared with the early postpartum period. However, the difference was highly significant when pregnancy was compared with the late postpartum (Table XIV). There was a small correlation ($r = 0.34$)

between depression scores during pregnancy and the early postpartum period, and a similar correlation ($r = 0.36$) between pregnancy and the late postpartum. This confirms the findings from earlier studies (Pitt, 1968; Dalton, 1971) that depression during pregnancy is not predictive of postpartum depression. However, the much greater correlation between depression scores in the early and late postpartum periods ($r = 0.68$) suggests that depression in the early postpartum is predictive of late postpartum depression.

A significant relationship between neuroticism scores and depression scores in the early postpartum period was found by Pitt (1968), using the short form of the MPI and his own Depression Questionnaire. The same assessment instruments were used in the present study, though on this occasion the MPI was administered during pregnancy. The correlations of neuroticism with depression scores in pregnancy and the early postpartum period were very similar ($r = 0.22$; $r = 0.25$). These low correlations suggest that neuroticism as a measure of trait anxiety is unlikely to be predictive of subsequent postpartum depression. There may be a relationship between severe anxiety states in pregnancy and clinical depression postpartum, as suggested by Meares et al (1976), though further studies are required in view of the uncertain findings reported to date.

(v) Health Problems

The extent to which women suffer unpleasant physiological sensations and minor symptoms during pregnancy varies considerably, and some women report marked variations between different pregnancies.

More serious illnesses during pregnancy have obvious potential to disrupt sexual adjustment, especially where the viability of the foetus is questioned. Persistent vomiting was the most commonly reported disturbance in the present study and other conditions occurred so infrequently that they had to be combined for purposes of statistical analysis. There was no significant relationship between the occurrence of health problems in pregnancy and global evaluations of sexual adjustment. However, a significant relationship was found between sexual adjustment and the frequency of minor symptoms during pregnancy measured by the Health in Pregnancy Questionnaire (Table XXXII). The relationship was complex, with the group who experienced no change in sexual adjustment showing the lowest number of symptoms, the deteriorated group showing the greatest number, and the improved group in between. It is possible that particular symptoms or combinations of symptoms might have quite specific effects upon sexual adjustment, though it was not possible to examine this suggestion in the present study. Kenny (1973) found that women who reported feeling physically well during pregnancy were much more likely to report increases in the frequency of sexual intercourse during the first trimester. The association between a variety of symptoms, especially nausea and tiredness and reductions in sexual activity in the first trimester, reported by Masters and Johnson (1966) and Falicov (1973), received some anecdotal support in the present study. The fact that there was no significant relationship with evaluation of sexual adjustment during pregnancy suggests that the effect of these factors is limited to the early stages of pregnancy, and that there is no continuing depressant effect when these symptoms are relieved in the second trimester.

Further work is required to establish the relative importance of these factors in affecting sexual behaviour in pregnancy.

Postpartum Sexual Behaviour

Studies in this field have generally reported postpartum changes in terms of only one aspect of sexual adjustment. Sexual interest and satisfaction have been the two most commonly employed measures, though Falicov (1973), Baxter (1972) and the present study have also included a frequency measure of sexual activity. The percentages of subjects in the increased, unchanged and decreased categories from the present study are compared with the findings from other relevant studies in Table LXII. For the purposes of this comparison the subjects in the present study who reported slight and marked decreases have been combined into a single decreased category.

It is difficult to draw firm conclusions from such a conflicting set of findings, but it does appear that the unchanged group formed the largest category in most studies, with between a third and two-thirds of subjects reporting no change in sexual behaviour. Few subjects seemed to report increased frequency of sexual activity, though in some studies over a third of subjects reported increases in sexual interest and satisfaction. Frequency of sexual activity appears to be the aspect most likely to show a decrease, with between a half and two-thirds of subjects reporting a lower frequency of sexual activity in those studies which assessed this aspect of sexual behaviour. Satisfaction and sexual interest are relatively less likely to be negatively affected. A great deal of the variation may be accounted for by the use of ill-defined global categories

Table LXII

Comparison of Studies of Postpartum Sexual Behaviour

Study	Follow-up	Prospective v Retrospective	N	Parity	Measures	% Increased	% Unchanged	% Decreased
Masters & Johnson (1966)	2 months	P	101	Mixed	Eroticism	24	29	47
Jacobsen et al (1967)	3 to 12 months	R	804	Mixed	Satisfaction	20	69	11
Nilsson & Almgren (1970)	6 months	P	152	Mixed	Satisfaction	12	49	40
Kenny (1973)	2 months to 7 years	R	33	Mixed	Desire	30	52	18
Tolor & DiGrazia (1976)	6 weeks	R	55	Mixed	Desire	35	38	25
Falicov (1973)	7 months	P	16	Primi-parous	Frequency	6	31	63
					Desire	31	63	6
					Eroticism	56	38	6
Baxter (1974a)	3 months	R	51	Primi-parous	Frequency	17	33	50
					Interest	37	28	35
					Orgasm	33	38	29
Present Study	9 to 12 months	P	101	Mixed	Frequency	13	41	46
					Interest	17	44	39
					Satisfaction	10	58	32

and the fact that different things were being measured in variable ways. It is, therefore, scarcely surprising that such discrepant findings have been reported.

The decreased category in the present study was divided roughly equally between subjects who reported slight decreases and those who reported marked decreases on the three measures of sexual behaviour. Unfortunately, most other studies give no indication of the proportion of subjects who showed marked decreases. There is quite close correspondence between the larger studies, if it is assumed that those reporting lower proportions in the decreased categories are concerned with individuals who show marked decreases, while those reporting the higher proportion have included all subjects who reported a decrease, however slight.

The study with which the present findings can most appropriately be compared is that reported by Nilsson and Almgren (1970). Both studies employed a prospective methodology with relatively large samples over an extended follow-up period. It is interesting to note that the proportions in the increased, unchanged and decreased categories are very similar in both studies. Although sexual history was explored by Nilsson and Almgren in some detail, the details of current sexual functioning are presented rather briefly. Their concept of sexual satisfaction is a broad one which deals with the "woman's appreciation of her sexual life as a whole". The validity of Nilsson and Almgren's concept of sexual adjustment is difficult to assess since they did not present objective data on the behavioural referants of their concept. In the present study a more objective

behavioural concept was adopted, which focused upon the frequency of sexual activity, the extent to which it was judged enjoyable and satisfying, other emotional reactions, discomfort and the partner's responses (pg. 119). In the present study an index of change in sexual adjustment was derived from the differences in scores on the two administrations of the Sex Behaviour Scale. This scale allowed subjects to indicate the frequency of a variety of sexual behaviours as well as their subjective reactions to sexual behaviour. In this way an all or none classification system was avoided and it was possible to compare the index of sexual adjustment against other variables for all subjects.

(i) Pre-existing Attitudes and Behaviour.

(a) Previous sexual behaviour. Women with a higher investment in sexuality before pregnancy were significantly more likely to show deterioration in sexual adjustment in the postpartum period (Table XXXIV). Thus, the hypothesis that women with lower investment in sexuality before pregnancy would show greater negative change postpartum was not confirmed, though there was some evidence from the present study that subjects in the "extreme group" who showed most negative change postpartum were characterised by poor pre-pregnancy sexual adjustment. A similar finding was reported by

Landis et al (1950) who commented that some subjects with good pre-pregnancy sexual adjustment appeared to have deteriorated in the postpartum period. Falicov (1973) found that there was a generalised decrease in frequency of sexual activity postpartum which was unrelated to previous investment in sexuality. Baxter (1972) has suggested that women with high intercourse rates before pregnancy may be more sensitive to negative factors, by which he seems to mean physical factors such as dyspareunia; while subjects who experience an accumulation of negative factors in the early postpartum period may show a decrease in sexual activity, independent of their previous level of sexual functioning. This implies that there will be a general decline in frequency of sexual activity in the early postpartum period with women who show the most marked decline experiencing a concentration of negative factors.

(b) Sexual Adjustment in Pregnancy. The relationship between adverse changes in sexual adjustment during pregnancy and postpartum sexual adjustment, predicted by Hypothesis A2, was not found (Table XXXV). The group who reported no change in sexual adjustment during pregnancy showed slightly less negative change in sexual adjustment postpartum, than either the group who improved, or the group who deteriorated during pregnancy. The unchanged group also showed somewhat less variability. The timing of cessation of intercourse during pregnancy showed a complex relationship with postpartum sexual adjustment. Subjects who had their last intercourse within the final three weeks of pregnancy showed relatively less negative change in the postpartum period than those subjects who discontinued intercourse earlier in the third trimester. However, the least negative change was shown by the 17 subjects who discontinued intercourse before entering the

third trimester. In a few cases in this group there was no intercourse at all during pregnancy. There was also no clear relationship between subjective evaluation of sexual adjustment during pregnancy and sexual adjustment postpartum, measured by the change in SBS score. It may be, as Baxter (1972) has suggested, that a sub-group with relatively low pre-pregnancy levels of sexual functioning have little scope for deterioration postpartum. Another possibility is that subjective evaluations of sexual adjustment during pregnancy are unreliable because some women discount changes which they see as purely temporary. Also women who have discontinued sexual activity early in pregnancy will find it difficult to judge any parameter of sexual behaviour, other than frequency, if they are sexually abstinent.

(ii) Emotional Factors

(a) Anxiety. There was some direct evidence that anxiety during the postpartum period adversely affected sexual adjustment. Those subjects who experienced adjustment problems with anxiety/depression showed a tendency to experience more negative change than individuals who had no problems or who suffered physical difficulties. These factors, together with fear of a further pregnancy, were strongly related to subjective judgements about factors affecting sexual response. There was, however, no clear relationship between neuroticism levels, either in pregnancy or the postpartum period, and changes in sexual adjustment.

A number of indirect variables with a hypothetical link to anxiety were also investigated. Landis et al (1950) suggested that

concern over contraceptive adequacy was linked to poorer postpartum sexual adjustment, and Masters and Johnson (1966) reported that a number of women were anxious about resuming intercourse too early for fear of physical damage. The pilot study suggested that health problems during pregnancy may lead to increased sexual nervousness and later resumption of sexual intercourse postpartum. However, in the main study no relationship was found between HPQ scores, or health problems in pregnancy and sexual adjustment postpartum. Investigations carried out during pregnancy, including amniocentesis, did not appear to be directly related to later changes in sexual behaviour. However, women who had been reassured by routine screening showed virtually no overall change in their sexual adjustment compared with the groups who reported either no reaction to the screening or that screening had caused them to question their pregnancy (Table XXXVII). Couples who had discussed their reaction to a positive result from the screening and decided to proceed with termination, if that was the medical advice, showed less negative change than the group who had either not discussed the matter or failed to reach a decision. Two couples had decided that they would proceed with the pregnancy, even against medical advice, if the screening proved positive. These couples showed significantly greater negative change. One woman said "It was the worst few days of my life waiting for the results, and even after the baby was born I couldn't relax, I kept expecting something to go wrong". This finding raises doubts about the advisability of routine screening for foetal abnormalities in couples who have committed themselves to pursue the pregnancy.

There appears to be a risk that anxiety levels will be unnecessarily raised with a consequent adverse effect upon enjoyment of the pregnancy and possible longer term effects, such as lower sexual adjustment in the postpartum period. This point is reinforced by the finding that problems with medical care, such as investigations and the provision of insufficient information were associated with significantly greater negative change in sexual adjustment postpartum (Table XXXVIII). Although the majority of women felt that the effects of these factors were temporary, rather than long-lasting, the effect upon sexual adjustment remained significant.

Problems associated with the baby showed no relationship with sexual adjustment even where these problems were judged to be of a serious nature. There was also no relationship between sexual adjustment and positive or negative perceptions of the baby, as measured by the Baby Questionnaire. This confirmed the finding from the pilot study, with measurement at a more appropriate point, and strongly suggests that sexual adjustment is not directly affected by problems with the baby. Highly specific or generalised weak effects, possibly acting through tiredness or fatigue, cannot be entirely discounted, but there is no evidence of their importance from the present study. There was no significant relationship between sexual adjustment in pregnancy and fear of harming the foetus (Table XXXI). However, such fears were expressed by a number of subjects and their husbands, and it is interesting to note that there was a significant relationship between fear of harming the foetus during intercourse and postpartum sexual adjustment (Table XXXVI). Since a number of women commented that their husbands were more

concerned about possible damage arising from sexual activity than they were themselves, one speculative interpretation is that some husbands may modify their sexual behaviour in the postpartum period due to fears of causing physical damage to their wives by intercourse. Anxiety about a too early pregnancy was commented upon by a number of women in the final interview, and subjects who were using inadequate contraceptive measures showed a highly significant reduction in sexual adjustment postpartum, compared with subjects whose contraceptive precautions were judged more adequate (Table XXXIX). Landis et al (1950) and Falicov (1973) have also provided anecdotal evidence which supports the link established by the present study between contraceptive adequacy, fear of further pregnancy and reduced sexual functioning in the postpartum period.

(b) Depression. The expected association between depression and lower sexual adjustment was found, though very few women reported persistent or severe symptoms. Treatment had been sought from general practitioners by six subjects and one had been referred to a psychiatrist for treatment. There was no relationship between depression during pregnancy or the early postpartum period and subsequent change in sexual adjustment. In the later postpartum period the occurrence of anxiety and depressive symptoms showed an association with greater negative change in sexual adjustment, which just failed to reach significance. Subjective assessment of factors influencing sexual adjustment postpartum confirmed this finding.

Although subjects who had sought treatment for depression in

the late postpartum period showed a tendency to experience more negative change in sexual adjustment this trend failed to reach significance. Similarly, scores on the depression questionnaire showed the expected trend with higher depression scores being associated with more negative change, though the trend did not reach significance (Table XL). There was a significant negative correlation between difference scores obtained from the Depression Questionnaire and difference scores on the Sex Behaviour Scale (Table XLI). This suggests an association between increases in mild depressive symptoms in the late postpartum period and reductions in sexual functioning. It proved difficult to establish a clear link between more serious depressive symptoms, which might lead an individual to seek treatment, and changes in postpartum sexual functioning. Only seven women had sought treatment for depression. This is in line with the finding of Pitt (1968) that roughly 11% of women could be diagnosed as suffering from puerperal depression in the late puerperium. The anecdotal evidence from the present study, particularly in the case of the "extreme group" who showed most negative change in sexual adjustment, emphasises the potential importance of this factor. A similar link between a larger number of psychiatric symptoms and decreased sexual satisfaction was reported in the Swedish studies of Jacobsen et al (1967) and Nilsson and Almgren (1970). A decrease in interest in intercourse was also reported by Baxter (1974a) in women with a greater number of psychiatric symptoms postpartum, though he noted that more physiologically based aspects of sexual behaviour, such as the ability to achieve orgasm, did not appear to be affected.

(iii) Physical Factors

(a) Labour and Childbirth. Explanations of changes in sexual behaviour following childbirth have generally given prominence to physical factors, such as breast feeding and increased dyspareunia (Cooper, 1970, and Hamilton, 1962). Complications during delivery showed an association with negative change in sexual adjustment postpartum, which only narrowly failed to reach significance at the 0.05 level. The ten subjects whose babies were delivered by Caesarian section showed a significantly greater deterioration in sexual adjustment postpartum (Table XLII). Labour in excess of more than 9 hours also showed a significant association with negative change in sexual adjustment postpartum, and although the group with the shortest labours also showed a tendency to experience greater negative change, this can probably be accounted for by the inclusion of Caesarian deliveries in this group (Table XLIII). Therefore, the results from the present study suggest strongly that longer labours are likely to be associated with a deterioration in sexual adjustment. Whereas, the results of Baxter (1972) suggested that longer total labour times should be associated with improvements in sexual adjustment postpartum. This raises doubts about the reliability of Baxter's findings; particularly bearing in mind the risk of obtaining significant results by chance when a large number of variables are subjected to post hoc analysis, as was the case in Baxter's study.

The finding that the majority of subjects had an episiotomy was surprising and suggests that episiotomy is becoming a routine obstetrical procedure. Although the remainder who did not have

an episiotomy showed slightly higher negative change scores the relationship was not significant. The group who judged delivery an unpleasant experience showed the smallest amount of negative change in sexual adjustment postpartum, while the small group of eight individuals who reported no reaction to the delivery showed the greatest amount of negative change. It was predicted that the group experiencing greater discomfort than expected would show most deterioration in sexual adjustment. However, this group showed the least amount of negative change: the greatest amount being shown by the group who judged discomfort during delivery to be "as expected" (Table XLIV). These findings are difficult to interpret, but it is possible that the group reporting no reaction may have used denial to defend themselves against uncomfortable feelings. Unfortunately, the degree of discomfort expected in labour and delivery by the group who judged their experiences to be "as expected" is unknown. It may be that a proportion of these subjects were particularly anxious and apprehensive and that they had their expectations confirmed by an unpleasant delivery. One subject commented, "I expected it to be terrible, and it was!".

(b) Breast Feeding. None of the breast feeding subjects in the present study reported the increased breast eroticism described for their subjects by Masters and Johnson (1966). Women who had elected not to breast feed or had discontinued breast feeding after a brief trial, described negative reactions to the biological aspects of breast feeding similar to those reported by Newson and Newson (1962). In general, European studies have tended not to confirm Masters and

Johnson's original finding (Jacobsen et al, 1967; Baxter, 1972).

Women in the present study who had attempted breast feeding in the first two months postpartum tended to show greater deterioration in sexual adjustment than subjects who had not breast fed or who had continued breast feeding beyond two months. This relationship just failed to reach significance at the 0.05 level (Table XLV). Subjects who were disappointed at their inability to continue breast feeding showed a non-significant tendency to report greater negative change in sexual adjustment. Baxter (1972) also found that women who had discontinued breast feeding before interview (11 - 15 weeks postpartum) were significantly more likely to have a decreased COR, but there was no reduction in COR for the group who were continuing to breast feed.

It has been hypothesised that delayed resumption of menstruation, possibly due to breast feeding, may lead to impaired sexual responsiveness in the puerperium (Baxter, 1972). However, subjects in the present study whose menstruation had not returned in the first two postpartum months showed no evidence of greater deteriorarion in sexual adjustment. An alternative explanation of the link between breast feeding and sexual behaviour derives from the theory of Newton (1973) that women with a low investment in sexuality are more likely to experience negative psychological reactions to breast feeding of the type described by Newson and Newson (1962). It seems reasonable to postulate that negative reactions such as excessive modesty and feelings of distaste associated with one bodily function, in this case breast feeding, may generalise to other areas of

reproductive inter-personal behaviour. The present study does not provide clear evidence on this theory, but it received some support from the comments of a number of women who had decided not to continue breast feeding. Examples were increased dislike of being seen in the nude by their husband, an aversion to having their breasts touched in sexual fore-play and feelings of revulsion towards sexual fluids.

(c) Vaginal Tension and Dyspareunia. There was no indication from the present study that impaired genital involution, which has often been assessed on the basis of length of vaginal discharge and delayed return of menstruation, was associated with poorer sexual adjustment in the late postpartum. Jacobsen et al (1967) found that impaired involution led to both increased and decreased dyspareunia compared with before pregnancy, though it did not appear to have a direct effect upon the resumption of intercourse or sexual satisfaction. It is possible that early attempts at intercourse, before involution is complete and muscular tonicity regained, may lead to discomfort which sensitises the individual during later sexual intercourse. A vicious circle might then be established, with anxiety over discomfort leading to tension and painful penetration, which in turn would tend to increase anticipatory anxiety during future sexual activity. This theory receives some support from the present finding that the presence of pain on resuming intercourse was significantly associated with lower sexual adjustment postpartum, even though three-quarters of subjects who experienced initial pain, reported improvement before the time of assessment (Tables XLVIII and XLIX). Increased vaginal tension showed a highly significant relation-

ship with lower sexual adjustment postpartum (Table XLVI) though increased tightness did not account for all the subjects who experienced increased dyspareunia postpartum. The length of practice of restorative exercises showed a complex significant relationship with sexual adjustment (Table XLVII). Roughly a fifth of subjects had not practised restorative exercises, and a little under a fifth continued to practise exercises beyond the fourth postpartum month. These two groups experienced more negative change in sexual adjustment than subjects who had practised exercises over a shorter period. A speculative interpretation is that women who fail to practise exercises may show poorer muscle tone, while women who continue to practise exercises in the late postpartum do so because they are still experiencing discomfort or impaired vaginal sensitivity. This interpretation would tend to support the view of Kegel (1952) that loss of muscle tone is an important factor in the impairment of sexual functioning after childbirth.

(iv) Social and Environmental Factors

(a) Accommodation. Previous studies in this area have paid relatively little attention to the social and environmental context in which changes in sexual behaviour occur, other than to note the general lack of significant relationships with such factors as socio-economic status and educational level. In the pilot study a significant relationship was found between spaciousness of accommodation and sexual adjustment. This finding was confirmed in the main study with the four subjects occupying over-crowded accommodation, showing significantly greater negative change in sexual adjustment than all other groups (Table LI). It is interesting to

note that a fifth of subjects had moved house following the birth and the majority indicated that they had done so because their previous accommodation was no longer adequate. Comments from subjects in over-crowded accommodation suggested that lack of privacy, and strain caused by the cramped conditions, contributed to the loss of interest in sex and reduced responsiveness.

(b) Unplanned Pregnancy. In the pilot study, unplanned pregnancy tended to be associated with a deterioration in sexual adjustment, though few women regarded their pregnancies as unplanned. In the main study a quarter of subjects indicated that their pregnancy had been unplanned and they tended to show greater negative change in sexual adjustment postpartum, though this failed to reach significance (Table LII). A smaller group of eight subjects reported that they had experienced a failure of contraception at the time of conception and this group showed a highly significant deterioration in sexual adjustment compared with the remainder who had not been using contraception at the time of conception (Table LIII). Although there was slightly more negative changes in sexual adjustment where the husband or wife reported being "not pleased" at the occurrence of the pregnancy the difference was not significant. Jacobsen et al (1967) found that there was an earlier resumption of sexual intercourse in the case of planned pregnancies, though sexual satisfaction did not change. It is possible that subjects who have experienced an unplanned pregnancy may be apprehensive about resuming sexual activity in the postpartum period because fear of a further pregnancy is particularly strong at that time (Falicov, 1973).

(c) Marital Relationships. Although half the mothers who had another child reported that they were concerned about having sufficient time for the older child, due to caring for the baby, this was not generally regarded as a serious problem. The following comment about an older child expressed the feelings of many other mothers, "It's not that he is really suffering, but I wish I wasn't always saying, 'wait a minute' to him". Similarly, although almost a fifth of subjects felt that there had been some deterioration in their marital relationship there were very few cases where this amounted to marital disharmony. The most common complaints were of insufficient time for each other and a reduction in shared activities due to pre-occupation with caring for the baby. This change was most keenly felt by primiparous subjects, many of whom had also relinquished an interesting and satisfying job during pregnancy, and these subjects generally took longer to adjust to their changed role.

With the exception of the marital scale concerned with sexual matters, the scales derived from the Marital Interaction Questionnaire showed low correlations with SBS scores (Table LIV). There were two scales which showed small significant correlations with SBS and one other scale where the correlation narrowly failed to reach significance. This suggested that increased quarrelling, less attentiveness on the part of the husband and reductions in shared activities are associated with deterioration in sexual adjustment postpartum. Although it seems reasonable to conclude that these changes in the marital relationship occur quite frequently after the birth of the baby, and that they play some part in modifying sexual behaviour;

the size of the correlations makes it parsimonious to conclude that, except for extreme cases, changes in sexual adjustment postpartum are largely independent of changes in the general marital relationship. Although this fails to confirm Hypothesis D3 it does support the impression gained from the clinical situation that couples who seek help with sexual problems following childbirth generally have a positive marital relationship.

(d) Social Life. Roughly a quarter of subjects reported that they had become more home-centred following the birth and there was a general reduction in interests and activities outside the home. A little over a third of subjects reported marked reductions in their social life following the birth and this showed a significant relationship with reduced sexual adjustment (Table LV). A quarter of subjects were either already working or planning to resume full or part-time employment within a short time. Although this group showed slightly more negative change in sexual adjustment there was no significant difference from the group who had decided not to seek employment. Taken together, these findings suggest that lack of social contact and stimulation may contribute to a lowering of sexual interest and activity during the postpartum period. A potent factor in reducing social contacts for a number of subjects in the present study, was the severe weather in the winter of 1977/78; when snow covered pavements made negotiating streets with a pram hazardous for a number of months. This made it difficult for some subjects to re-establish or maintain contact with friends.

(e) Advice and Support. The group who spent more than nine days in hospital following the birth tended to show more negative change in sexual adjustment than the group who were discharged earlier, though this narrowly failed to reach significance at the 0.05 level. The reason for this relationship is unclear but it may indicate that health problems in the mother or baby at this time can lead to difficulties of adjustment. One woman who had spent almost 3 weeks in hospital after the birth said, "It threw out all my plans, I was longing to get home to my husband, and it took me ages to settle when I did get home". Only a little over a half of the women received any help at home, either from a relative or their husband following discharge, and although there was a tendency for women who had no help to experience more negative change in sexual adjustment, the difference was not significant.

Attendance at childbirth classes showed a significant relationship with postpartum sexual adjustment (Table LVI). Those primiparous women who did not attend childbirth classes showed much greater deterioration in sexual adjustment than primiparous and multiparous women who attended childbirth classes, and women expecting their second child who did not attend classes. Comments from subjects suggested that those who attended not only gained useful practical advice but also benefitted from increased confidence and lower anxiety levels in relation to childbirth and motherhood. It seems likely that lower anxiety and increased confidence were the important factors in producing relatively better postpartum sexual adjustment rather than specific advice about sexual behaviour which was generally minimal.

The medical advice available in the postpartum period, mainly from

Health Visitors, was judged to be satisfactory by almost all subjects. There was no evidence that this had any relationship with sexual adjustment. As noted earlier there was no correlation between the marital scales concerned with family influences and helpfulness of the husband, and sexual adjustment. These findings suggest that a degree of advice and family support appropriate to individual needs was maintained for most subjects in the present study. However, counselling and advice from professional sources on sexual topics was largely unavailable, though a number of women had obtained information from books and television. Those who had experienced some loss of interest in sex and reduced responsiveness reported feeling relief on learning that these changes were also experienced by other women and were not unique to themselves. Improved information on this subject would be generally welcomed.

Conclusions

Before drawing conclusions from the research the limitations of the present study must be considered. The major drawback, which has been referred to earlier, concerns the target population reached by the study. Although the sample can be considered representative of women from the City of Edinburgh who conceive after marriage, the exclusion of women with out-of-wedlock pregnancies and the special characteristics of the City resulted in bias towards higher socio-economic groups. Failure to include proportionate numbers from social classes IV and V is a serious weakness which limits the ability to generalise the findings, though all major studies in this field have encountered similar problems. In subsequent studies it may be possible to overcome sampling difficulties by the choice of geographical areas more representative of all social groups or by means of stratified samples.

The use of stratified samples would also assist in rectifying another weakness of the present study, namely the very small numbers of subjects contained in certain comparison groups, e.g. caesarian section patients, failed contraception, unsuccessful breast feeders. The potential importance of such groups, identified in the present observational study, requires further investigation with larger numbers which could be obtained most economically through the use of stratified samples. It is less easy to see how the difficulties created by out-of-wedlock pregnancies could be overcome. Although sexual adjustment is conceptualised as a process, changes are expected to be relatively slow, apart from normal day-to-day fluctuations. However, certain major life events such as marriage, childbirth, divorce or bereavement contain the potential for sudden and marked shifts in sexual adjustment. Subjects who marry during the course of pregnancy will be affected simultaneously by two major changes in their circumstances, and effects and interactions will be difficult to untangle.

Interpretation of the present findings must also take account of the measuring instruments used to monitor change in sexual behaviour. It is desirable that whenever possible researchers should use established measures of proven reliability and validity so that results can more easily be compared with other studies. Unfortunately, no acceptable scale or interview schedule of sexual behaviour, targeted to the population of pregnant women, was available at the commencement of the present study. It is considered that the Sex Behaviour Scale developed for this study demonstrated acceptable reliability and validity, and that the interview methods also yielded reliable information. Further independent validity checks were considered; in

particular follow-up interviews with a random sample of subjects spouses, but logistical problems prevented implementation. This would only have provided a marginal and somewhat controversial increase in validity, since it is considered that although sexual adjustment usually exists within a dyadic relationship it is essentially an individual and subjective phenomenon. Thus, validity remains the most serious problem for self-report measures of sexual behaviour and this must inevitably constrict the interpretation of the present findings.

Although reliance exclusively upon self-report measures is unsatisfactory, alternatives are not easy to devise in the area of sexual behaviour in the natural environment. There is clearly an important place for laboratory studies of the physiological responses of pregnant and postpartum women of the type conducted by Masters and Johnson, but these compliment rather than replace naturalistic observational and experimental studies. The use of day-by-day recordings and visual analogue scales (Cullberg et al, 1969) could potentially improve accuracy of recording and facilitate more detailed analysis of sexual behaviour during pregnancy and the postpartum. The expected difficulties would centre upon increased drop-out due to the demands of the regular recording and modification of behaviour resulting from the self-monitoring process. Further research is needed to establish the relative importance of the variables used to assess sexual adjustment. If there is evidence that subjects are in agreement about the order of importance of variables then it would be possible to attach weight to items and thus improve the validity of the scale. However, it is probable that there would be individual as well as social class and cultural differences, and importantly that different judge-

ments might be made at different levels of sexual adjustment.

The lack of established developmental norms for sexual behaviour makes it difficult to assess the importance of the changes observed in the present study. It is possible that over a period as long as two years many couples may experience significant changes in their sexual relationship even without the intervention of major life events such as pregnancy. Improved adaption might be expected in the early years of marriage as partners accommodate to each other and the older subjects, who had been married longer, showed higher initial levels of sexual adjustment in the present study. For this reason the observation of almost universal decline in sexual adjustment following childbirth is particularly interesting. Although regression to the mean in the repeat administration of a scale such as SBS can be expected, the lack of symmetry, with low scorers also showing deterioration, argues against this interpretation of the findings. Furthermore, the correspondence with interview reports is striking and it is difficult to see how questionnaire responses and interview data could have been influenced in this direction by social desirability or expectancy effects. Observer bias may have played a part especially in the interviews though every effort was made to minimise distortion through the use of structured interview schedules. This also provides some additional justification for the use of a self-report inventory, since observer bias could only minimally have affected the administration and scoring of the Sex Behaviour Scale.

Biological factors have been relatively neglected in the present study for two main reasons. Firstly, at the planning stage of the study in 1974 expert advice was sought which indicated that post-

partum physiology was as yet imperfectly understood, and that attempts to link hormonal changes with changes in sexual behaviour in the postpartum would be premature. Secondly, the practical difficulties of mounting a long term study of a relatively large, non-volunteer sample, of women involving hormonal assays appeared to be formidable cf. Nott et al (1976). In view of these points it was decided to restrict the observation of biological factors to indirect measures, such as the length of postpartum vaginal discharge, problems with genital involution, return of menstruation and breast feeding. No significant relationships were found between those variables and changes in sexual adjustment, though there was a tendency for subjects who had discontinued breast feeding in the first two months postpartum to experience greater deterioration in sexual adjustment than both non-breast feeders and women who breast fed beyond two months. Psychological reactions to breast feeding and any difficulties encountered seemed to be most important factors. Indeed, the difficulty with all indirect measures is that any behavioural changes are just as likely to have resulted from psychological reactions to the biological factors as from aberrant hormonal levels.

Thus improvements in sampling and methods of assessment of sexual functioning and greater attention to biological variables would have considerably strengthened the present study. However, perhaps the major weakness is the lack of any experimental manipulation of the variables under study. To some extent this is inevitable since many variables, e.g. age, social class, educational level, are not really capable of manipulation and other variables, e.g. caesarian section, length of labour, breast feeding, cannot ethically be controlled for research purposes. Nevertheless, certain aspects of obstetrical care such as pre-natal screening, childbirth classes

restorative exercises, could potentially be compared by studied matched groups in various settings where different practices occur naturally. In addition biological and psychological factors could be investigated by comparing pregnant and postpartum women with relevant groups such as gynaecological patients, abortion and sterilisation cases and adoptive parents.

Within the limitations of the present study certain tentative conclusions can be drawn. Although there was considerable individual variation in the pattern of sexual behaviour during pregnancy and the postpartum period some general trends were observed. In the first two trimesters of pregnancy the majority of women reported little change in the frequency of sexual activity or sexual interest, though two-thirds reported decreases in sexual satisfaction. There was a general improvement in the second trimester, which was maintained for most subjects until the final weeks of pregnancy. There was evidence from the present study of a general reduction in sexual interest and activity during the first year after childbirth. A longer follow-up period would be necessary to establish the permanence of these changes. There was some evidence from subjective reports and non-significant trends in the data of slow but steady improvement in sexual functioning towards the end of this period.

A small number of subjects reported marked deterioration in sexual adjustment postpartum, though they appeared to be quantitatively rather than qualitatively different from the remainder of the sample. It is interesting to note that the importance of a number of factors identified by clinical observers was supported

by the present study. An association with physical factors such as dyspareunia, vaginal muscle tonicity and breast feeding was noted as was a link with anxiety and depression, unplanned pregnancy and the initial level of sexual behaviour. Anxiety may be generated by health problems, medical investigations and fear of pregnancy as well as a number of more specific difficulties. Appropriate advice and sensitive handling could assist in alleviating these problems, and attendance at childbirth classes may also be particularly useful. At present the relationship of sexual behaviour to the complex psychological reactions to delivery, breast feeding and role changes within the family and society is less clear.

A most interesting finding was that pre-pregnancy sexual adjustment showed a quite different relationship with sexual behaviour during pregnancy and the postpartum. Higher levels of sexual adjustment before pregnancy were associated with rather less decline in sexual behaviour during pregnancy and relatively more deterioration in sexual adjustment postpartum. During pregnancy changes in sexual behaviour were assessed by interview whereas in the postpartum changes in sexual adjustment were measured by changes in questionnaire responses as well as by interview. It is the difference on the questionnaire measure that is discussed here. This means that different techniques were used to assess changes in sexual behaviour in pregnancy and the postpartum. The possibility of artifactual results arising from the questionnaire assessment was dealt with earlier. It is also important to bear in mind that "deterioration" is relative. Thus initial high scorers who show more deterioration postpartum than low scorers will almost certainly maintain a higher level of sexual adjustment in the

postpartum, since initial low scorers also deteriorate, though less markedly. For some initial low scorers it is possible that they have relatively little scope for further deterioration, both in reality and in terms of the floor of the questionnaire. Despite these uncertainties it seems reasonable to infer that women with high levels of sexual adjustment before pregnancy will tend to maintain their interest, frequency and satisfaction during pregnancy and experience a deterioration in the postpartum period. Whereas women with low levels of sexual adjustment before pregnancy will tend to experience an earlier and more marked decline during pregnancy with some improvement in the postpartum but not to pre-pregnancy levels.

Changes in sexual behaviour in pregnancy and the postpartum appear to be associated with a wide range of other variables in addition to previous level of sexual adjustment. During pregnancy physical factors such as physiological disturbances in the first trimester and postural discomforts in late pregnancy appear to play a major role. Anxiety over harm to the foetus was expressed by a number of women or their husbands, but it did not appear to have had a significant effect upon sexual behaviour except in the case of women who had experienced a previous miscarriage where sexual activity was often considerably reduced. Sexual satisfaction was the aspect of sexual behaviour most affected in pregnancy and it is suggested that this is consistent with the view advanced above of the importance of physical factors, since it is considered that frequency of sexual activity and sexual interest would be less sensitive to these factors.

Other unmeasured variables may be of importance, e.g. the rapid rise in oestrogen and more importantly progesterone, as pregnancy advances could lead to a reduction in sexual interest as there appears to be a sub-group

of women who are prone to loss of libido when using contraceptive pills of high progesterone content (McCauley and Ehrhardt, 1976).

Emotional factors related to stress form an important dimension in the understanding of changes in postpartum sexual adjustment. Anxiety, which can be postulated as an associated factor with a number of variables which showed a significant relationship with lower sexual adjustment, is known to interfere with sexual functioning (Masters and Johnson, 1970). Where high levels of anxiety are present even for a relatively short time it is possible that the effect on sexual performance sensitises the individual (or the couple) so that they develop anticipatory anxiety prior to sexual activity and "spectatoring" of their own responses. In this way the disturbance of sexual functioning may be perpetuated long beyond the period of initial emotional disturbance. It is postulated that one way in which changes in vaginal tension and increased dyspareunia influence sexual adjustment postpartum is by means of anticipatory anxiety which results from the initial experience of pain or discomfort in intercourse and subsequently produces tension leading to further discomfort and the creation of a feed-back loop.

The depressive episodes observed in the present study, though severe in a few cases, were generally of a brief and fluctuating nature. Fatigue, stress and psychological reactions to role changes all played a part, but the most tantalising possibility concerns the link with hormonal changes. Although sexual interest and responsiveness are frequently impaired in depression, in the case of postpartum depression it is possible that both the disturbance of sexual behaviour and the depression could result from the changes in hormonal levels. In particular the rapid drop in progesterone

levels in the immediate postpartum period has been suggested as a possible cause of postpartum depression.

Although hormone levels were not measured directly return of menstruation and breast feeding were noted since Masters and Johnson (1966) suggested that prior to the first postpartum menstruation oestrogen levels are low leading to reduced sensitivity of the pelvic structures responsible for orgasm. A link between breast feeding and low orgasmic capacity via delayed resumption of menstruation was predicted by Baxter (1972) who speculated :-

"that the depressant effect of breast feeding on libido acts in a way other than just by delaying menstruation and thereby reducing pelvic sensitivity - perhaps (and this can be no more than the most tentative suggestion) via change in the level of production of other pituitary hormones".

In the past few years evidence has accumulated on the role of prolactin, the existence of which as a separate hormone distinct from human pituitary growth hormone was seriously doubted until recently (Yen, 1978). Prolactin levels rise steadily during pregnancy along with other hormones which together promote breast development. While pregnancy proceeds oestrogen and progesterone inhibit milk formation but following delivery the levels of these hormones drop rapidly leaving the lactogenic action of prolactin unopposed. By the second or third postpartum week prolactin levels are near the normal range and lactation is maintained by periodic surges of prolactin release stimulated by suckling. During labour prolactin levels decline steeply to be followed by a surge of prolactin release just prior to and immediately following delivery. Interestingly, this pattern is not shown by women who undergo elective caesarian section.

Until recently it was thought that prolactin had no effect upon ovarian function, then it was recognised that elevated prolactin levels were frequently present in women with galactorrhea and amenorrhea, and also in about one fifth of women with functional secondary amenorrhea (Catt and Pierce, 1978). It seems possible that this results from the depression of steroid secretion by the granulosa cells due to high concentrations of prolactin within the follicular fluids (Saxena, 1977). Thus there may be a possible hormonal mechanism to underpin Baxter's extension of Masters and Johnson's theory concerning breastfeeding, delayed menstruation and reduced sexual interest and satisfaction. It may also suggest a link between hormonal levels, and the marked deterioration in sexual adjustment observed in caesarian section cases in the present study. Although no significant relationship was found between sexual adjustment and delayed resumption of menstruation, subjects who discontinued breast feeding in the first two postpartum months showed significantly more deterioration in sexual adjustment. It may be speculated that hormonal disturbance at this time could affect the resumption of sexual behaviour. Difficulties once encountered might persist well beyond the period of hormonal variation as a result of learned response patterns similar to those described for anxiety.

Physical factors may more directly affect sexual response via distortions of genital anatomy brought about by delivery. Changes in vaginal tension were significantly associated with deterioration in sexual adjustment and subjects who failed to practise restorative exercises or who continued to practise beyond four months showed significantly greater deterioration in sexual adjustment postpartum. One speculative interpretation of these findings is that failure to

practise leads to poor muscle tone and impaired vaginal sensitivity which adversely affects sexual satisfaction by reducing orgasmic capacity. The fact that women who continued to practise exercises into the late postpartum also experienced significantly greater deterioration may be accounted for by the observation that some of these women were continuing to practise exercises because they were still experiencing dyspareunia or impaired vaginal sensitivity due to poor muscle tone.

Many diverse factors obviously affect sexual behaviour in the postpartum but it is suggested that the conceptualisation of the findings along theoretical dimensions of emotional reactions, hormonal changes and physical factors such as dyspareunia and vaginal tension provides a worthwhile integration and simplification of the present findings. Other dimensions may be important, particularly psychological reactions of distaste or revulsion to bodily processes but the evidence is as yet unclear. Relationship changes at least in terms of disharmony do not seem to be of major importance though the positive role of love, sharing and increased emotional security has not been explored. Changes in the sexual relationship may be accommodated within a loving and harmonious marriage especially where the couple see the changes as of a temporary nature. Finally, it is important to emphasise the multi-factoral causation of changes in sexual adjustment following childbirth. Individual variation is considerable and a number of factors may act singly or in combination to produce changes in sexual behaviour which in turn are inevitably influenced by previous sexual experience, investment in sexuality and the quality of the marital relationship.

Health Care Implications

Many of the variables which adversely affect sexual behaviour in pregnancy and the postpartum are not capable of modification within the context of obstetrical care. Nevertheless, certain aspects of medical practice have been found to have a significant effect upon sexual adjustment, and ante-natal and postpartum clinics, childbirth classes and mother and baby clinics offer important opportunities for the provision of advice and counselling. For these reasons it is considered appropriate to review the findings from the present study in the light of current obstetrical practice in an attempt to identify ways in which care might be enhanced.

The present pattern of obstetrical care in Britain lays great stress upon thorough medical monitoring and the avoidance of risk to mother and baby. This sometimes means that psychological factors are relatively neglected. Women frequently state that they experience great difficulty in exposing their ignorance and anxieties to doctors in a busy surgery or ante-natal clinic. The pressures of the clinical situation drive long-nurtured questions from their throughts and make it difficult to retain important information. These problems will only be overcome when all professionals who interact with the pregnant woman are able to show greater awareness of the broader psychological meaning of pregnancy for the individual. The value of routine screening and sophisticated investigative techniques has to be balanced not only against possible medical risks but also emotional reactions which may have long-term consequences for personal adjustment.

The evidence presented in this study strongly suggests that a great deal could be achieved by providing improved advice and

information to pregnant women in relaxed settings. Childbirth classes can make an important contribution, though they need to be linked to improved advice and support facilities following childbirth. Books and pamphlets have become an important source of information for many women, especially in the field of sexual behaviour, though the quality of advice and information varies considerably. It seems reasonable to conclude that if couples are made more aware of the patterns of change in sexual behaviour which can occur during pregnancy and following childbirth, they will be better able to cope with any changes and to avoid possible deteriorations in their marital relationships. More specific advice on the objective dangers to mother and baby arising from sexual activity in pregnancy and the puerperium would reduce unnecessary anxiety; and a more widespread appreciation of the value of post-natal restorative exercises should improve postpartum sexual adjustment.

Predictive indices were derived from the multiple regression analyses in order to assist in the identification of women who were more likely to experience serious negative changes in sexual adjustment following childbirth. A combination of predictive variables available at the time of attendance at the ante-natal clinic should permit early identification of women liable to show deterioration in sexual adjustment, and allow appropriate advice and counselling to be made available. The first five or six variables identified in the present study would probably be capable of predicting a substantial proportion of the total variance. The group selected at this time would be characterised by relatively higher levels of sexual functioning before pregnancy, fear of harming the foetus

during intercourse and anxiety resulting from medical investigations. Their pregnancies would tend to be unplanned and although undergoing their first pregnancy they would generally not attend childbirth classes and would lack appropriate advice about sexual behaviour during pregnancy. The implications are that counselling to reduce the negative impact of investigations and the provision of advice and information about sexual behaviour during pregnancy, together with encouragement to attend childbirth classes, might go a considerable way towards reducing the likelihood of negative change in sexual adjustment postpartum. None of these interventions would require major changes in the organisation of ante-natal care or the provision of new facilities. Some additional information would have to be collected and staff would need to be more sensitive to the emotional reactions of the women. Once identified subjects at risk could be seen briefly for further assessment and then referred to a counselling group if appropriate. Such groups might form part of the normal childbirth classes provided in association with the clinic to avoid developing a problem focus and raising anxiety levels.

The timing of the post-natal examination is unfortunate from the point of view of identifying women who are more likely to experience a deterioration in sexual adjustment postpartum. These examinations are commonly held at about 6 weeks postpartum, at which time the majority of women have not yet resumed intercourse. Indeed, it is sometimes assumed by women that this examination is necessary before it is safe to resume intercourse. In the present study roughly 40% of women resumed intercourse before the sixth week

postpartum. A later contact point at about 12 weeks postpartum would ensure that almost all women had resumed intercourse prior to the interview. This would enable assessment of the extent of any initial dyspareunia and changes in vaginal tension, which play such an important part in predicting later problems with sexual behaviour. Difficulties with breast feeding and adverse psychological reactions could also be noted at this time. The assessment of other contributing variables would be relatively easy and the development of predictors a comparatively simple matter. Following this interview subjects with dyspareunia or lack of vaginal muscle tonicity could be offered advice and instruction in the practice of restorative muscle exercises (Kegel, 1952). It should also be possible to provide counselling for women who experience negative reactions to breast feeding or other aspects of the delivery situation. In the later postpartum period the other major contributing factor to change in sexual adjustment is an increase in anxiety or depressive symptoms, though it is not possible to say clearly whether these should be considered a partial cause, or a consequence, of deterioration in sexual adjustment. Although specialist facilities may be necessary to assist couples who experience severe negative changes in sexual adjustment it seems possible that the numbers could be considerably reduced if the foregoing suggestions for preventative intervention and early identification were widely implemented. In view of the relatively minor modifications to current practice which would be required, these developments should prove cost-effective and would amply repay the efforts of those involved by the improvements in marital happiness which ought to follow.

Implications for Further Research

A major drawback of the present study, and that of most similar studies, has been the failure to obtain representative samples from the point of view of social class distribution. Further studies in this area will need to pay careful attention to research design in order to ensure that sufficient subjects from social classes IV and V are included to provide a balanced sample. In view of the sampling problems created by the number of out-of-wedlock pregnancies in primiparous subjects, it may be useful to concentrate future research on multiparous subjects. The results from the present study emphasise the value of the prospective method of investigation and there appears to be little further justification for conducting retrospective studies in this area.

Subjective global evaluations of sexual adjustment have been of value in preliminary attempts to map out this field of study. These judgements appear to correlate well with more objective questionnaire measures of various facets of sexual behaviour. There is some evidence from the present study that specific changes in sexual behaviour may occur during pregnancy and the postpartum, and more detailed studies would be helpful to establish which aspects of sexual behaviour are most likely to change. It is abundantly clear that in the field of sexual behaviour different answers will be elicited depending upon the language in which the questions are couched and the format in which they are presented. It is to be hoped that a degree of standardisation of approach will soon be achieved along similar lines to the behavioural questionnaire used in this study.

In the course of the present study no systematic attempt was made to discover the reactions or contributions of husbands to the sexual relationship. A one-sided view of an essentially two-person situation obviously has its limitations. Unfortunately, this is a deficiency in all major studies in this area. In view of the anecdotal evidence from the women in the study, and the comments of a number of husbands who were seen by chance at the home visits, this is an aspect which urgently requires investigation.

A rather confused picture still exists concerning the relationship of previous levels of sexual adjustment to sexual adjustment in pregnancy and the postpartum period. Speculative notions have been advanced to account for these findings, but improvements in technique and research methodology will be required to clarify this relationship. Personality variables, other than those linked to anxiety, such as neuroticism, or derived from psychoanalytic theory, have been relatively neglected in relation to sexual behaviour. More fundamental research into this aspect is required so that the interaction between personality, pregnancy and sexual behaviour can be more fully investigated. Although the correlation between impaired sexual responsiveness and depression has again been noted, the ways in which depression affects sexual behaviour is poorly understood and it is necessary to establish which aspects of sexual behaviour are most likely to be affected. The role of hormones in determining sexual behaviour is also poorly understood and this seems likely to be a field in which new assessment techniques and improved methodology will eventually lead to considerable advances in knowledge. Early progress seems likely in relation to pregnancy

and lactation and it is to be hoped that researchers will be able to incorporate measures of sexual behaviour in their studies.

The pattern of sexual behaviour during pregnancy is now more clearly established, but further work is needed to identify the crucial factors leading to changes in sexual behaviour and their manner of operation. In particular, the importance of the various disorders and discomforts, commonly experienced in the first trimester and presumably caused by physiological factors, needs to be more thoroughly investigated.

Longer follow-up studies will need to be mounted in order to establish the permanence of changes in sexual behaviour following childbirth. Longer follow-up periods inevitably allow many more new variables to enter the situation and the link with pregnancy and childbirth will become attenuated. Nevertheless, a follow-up period of two years would be useful in order to establish whether the trend of improvement in sexual adjustment continues beyond one year, perhaps until it eventually approximates pre-pregnancy levels. The contradictory findings from the present study and those of Baxter (1972) with regard to length of labour and postpartum sexual adjustment, can only be resolved by a study which focuses more specifically upon this relationship. The reason why women discontinue breast feeding early in the puerperium and the effect this has upon sexual attitudes and behaviour requires further investigation. Particularly, since most of the current evidence is largely anecdotal.

Physical factors such as dyspareunia are proposed as candidates for an important role in determining sexual adjustment after childbirth. Research on this aspect could usefully focus upon the value of various treatment approaches, particularly the restorative exercises advocated by Kegel (1952), and on comparisons with other groups of women who suffer dyspareunia due to a variety of other causes. Gynaecological operations may have a variety of specific as well as general effects upon sexual adjustment (Amias, 1975) and the sexual behaviour of such patients could profitably be compared with women who experience dyspareunia following childbirth. The emotional impact of medical investigations during pregnancy has been a comparatively neglected area and the present study suggests that where anxiety and doubts about the viability of the foetus are raised, there may be important, relatively long-term, consequences. This constitutes an additional element for consideration in the debate concerning routine screening for foetal abnormalities.

Proposals have been made for the development of improved counselling and advice services for pregnant women and mothers. A controlled study which assessed the value of these services and their contribution to reducing the incidence of sexual difficulty following childbirth would be of enormous value. In such a study the utility of the predictors established by the present research could also be assessed. It would be particularly interesting if women likely to experience severe deterioration in sexual adjustment postpartum could be identified by these predictors at an early stage.

APPENDIX 1

Interview Schedules

1. Ante-natal.
2. Post-natal.
3. Follow-up.

PREGNANCY RESEARCH PROJECT

CARD NUMBER [1]

PROJECT NUMBER [2 3 4]

AGE W [5 6]

H [7 8]

PLACE OF BIRTH

0 Edinburgh W [9]

1 Other Lothians

2 Other Scotland

3 Other U.K. H [10]

4 Other (specify)

ACCOMMODATION

0 Owner occupied — 0 single apt.

1 Corporation — 1 two apts.

2 Other rented — 2 three apts.

3 Parents — 3 four apts.

4 Other (specify) — 4 five apts.

5 other (specify)

[11] [12]

RELIGION

0 Protestant W [13]

1 R.C.

2 Jewish H [14]

3 Other (specify

EDUCATION

0 No qualifications W [15]

1 'O' levels

2 Highers/'A' levels

3 Higher education H [16]

4 Graduate

OCCUPATION

antenatal [17]

husband [18]

0 None

1 Casual — H. shift work

2 Part-time — 0 No [19]

3 Full-time — 1 Yes

4 Other (specify)

SOCIAL CLASS

1 I

2 II

3 III [20]

4 IV

5 V

MARITAL STATUS [21]

0 Married

1 Separated

2 Divorced — years married [22 23]

3 Widowed

4 Single

Previous marriage 0 No

1 Yes [24]

PREVIOUS PREGNANCIES

Number 25 ☐
Previous Still Birth 26 ☐
Spontaneous Abortion 27 ☐
Therapeutic Abortion 28 ☐
Abnormalities .....
Number of live children 29 ☐

THIS PREGNANCY

1. How did you feel when you knew you were pregnant?
.....
.....
.....
.....

2. How did your husband feel?
.....
.....
.....
.....

3. Did you feel different from previous pregnancies?
.....
.....
.....
.....

4. Were you using any contraceptive at the time?
0. None
1. Withdrawal
2. Safe period ☐
3. Sheath
4. IUD
5. Pill
6. Other (specify)

5. Have you had any special anxieties about this pregnancy?
.....
.....
.....
.....

6. Have you been emotionally upset at any time during the pregnancy?
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.....
.....
.....

7. Have you been unwell at any time during the pregnancy?
.....
.....
.....
.....
0. Uneventful
1. Persistent vomiting
2. Anaemia
3. Haemorrhaging ☐
4. Hospitalisation
5. Other (specify)

8. Have you had any special investigations during your pregnancy?
.....
.....
.....
.....

9. How did you feel about these investigations?
.....
.....
.....

10. Do you think the investigations affected your (or your husband's) attitude to the baby?
.....
.....
.....

11. Early Antenatal care

    0. G.P.

    1. W.G.H. ☐

    2. Other (specify)

12. Did you take part in any child-birth classes?

    .....

    .....

    .....

    .....

13. How do you feel about the ante-natal care you have received?

    .....

    .....

    .....

    .....

14. Do you think being pregnant has affected your relationship with your husband (in any way)?

    .....

    .....

    .....

    .....

15. Has being pregnant affected your sexual relationship?

    .....

    .....

    .....

    .....

16. What changes (if any) occurred in your sexual behaviour compared with before you became pregnant?

    a) in the first trimester

    .....

    .....

    b) in the second trimester

    .....

    .....

    c) in the third trimester

    .....

    .....

	1T	2T	3T
Frequency			
Interest			
Satisfaction			

17. What do you think was responsible for these changes?

    .....

    .....

    .....

    .....

18. Did you have any worries about sex during pregnancy

    .....

    .....

    .....

    .....

19. Were you given any advice about sex during pregnancy?

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20. Have you any other comments to make about your experience of this pregnancy?

    .....

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Project No. | | | |

PREGNANCY RESEARCH PROJECT

POST-NATAL QUESTIONNAIRE

The following questions are concerned with your reactions to childbirth and your feelings in the first few weeks after the birth. Please answer each question as fully as possible by writing in the space provided. If you need more space continue at the end of the questionnaire, remembering to number the continued answers clearly.

DELIVERY

1. Date of delivery .....

2. Were there any problems or complications in late pregnancy?

.....

.....

.....

.....

3. Was labour induced? If so, for what reason?

.....

.....

.....

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4. How long were you in labour?

.....

5. Did you have an episiotomy (cut and stitches)?

.....

.....

6. How do you feel about your experience of labour and child-birth?

.....

.....

.....

.....

HOSPITAL

7. Were there any problems in the first few days after the birth?

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.....

.....

8. How long were you in hospital? Was baby discharged at the same time?

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9. How do you feel about your stay in hospital?

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HOME

10. Did you have any help on your return home?

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11. Was your husband able to take time off work?

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12. How did your other children (if any) react to the new baby?

.....

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13. Were there any special circumstances which made it difficult for you to settle down?

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14. Did you have any problems with your baby, e.g. feeding, sleeping or illness?

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15. Did you breast feed your baby? If so, for how long?

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16. What are your reactions to breast feeding?

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17. How did your husband react to you breast feeding?

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HEALTH

18. Have you had any health problems since the birth?

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19. Have you been depressed since the birth? If so, for how long and did you seek treatment from a doctor?

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20. How many weeks did you have a vaginal discharge (slight loss of blood) after the birth?

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.....

21. When was your first period?

.....

.....

.....

22. Approximately, how long before the birth did you last have intercourse?

.....

.....

.....

23. What changes (if any) occurred in your sexual behaviour in the last 3 months of the pregnancy.

.....

.....

a) Frequency .....

.....

b) Interest .....

.....

c) Satisfaction .....

.....

24. How many weeks after the birth did you resume intercourse? (Please indicate if not yet resumed).

.....

.....

.....

25. Did you experience any pain or discomfort on resuming intercourse? If so, has it improved?

.....

.....

.....

26a Do you feel that your vagina is tighter, slacker or about the same compared with before pregnancy?

.....

.....

26b Has your husband noticed any changes?

.....

.....

27. Did you practise any exercises after the birth? If so, for how long?

.....

.....

28. Where was your post-natal examination carried out? Were there any problems?

.....

.....

GENERAL

29. How did your husband react to the baby?

.....

.....

.....

30. Do you feel that you have changed in any way since the birth? (e.g. emotionally or physically).

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31. Have there been any changes in your relationship with your other children? (If any).

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32. Have there been any changes in your relationship with your husband since the birth?

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33. Any other comments?

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Project No. | | | |

PREGNANCY RESEARCH PROJECT

FOLLOW-UP QUESTIONNAIRE

Supplement to post-natal questionnaire

DELIVERY

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HOME

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HOSPITAL

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HEALTH

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1. Months since birth .....

2. Have there been any problems with the baby? (e.g. feeding, sleeping or illness).

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3. Have you had any health problems since attending the post-natal clinic?

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4. Do you still feel affected by the pregnancy or childbirth?

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5. Have you as much energy and interest in things as before?

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6. Have you been depressed since attending the post-natal clinic?

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7. Have there been any major changes or problems in your life since the birth? (e.g. new accommodation, size and other residents).

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8. Do you feel you have adjusted to the new situation? How long did it take?

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9. How has your domestic and family life changed?

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10. Has your social life been affected?

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11. Have you kept up interests and hobbies outside the home? (e.g. sport)

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12. Do you have a job? Do you intend to take one in the next six months?

.....

.....

.....

.....

13. Has your relationship with your other children (if any) changed at all?

.....

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.....

.....

14. Has your relationship with your husband changed in any way? Role changes?

.....

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.....

15. Do you feel your sexual relationship has changed in any since before pregnancy

.....

.....

.....

16. Have you noticed any long-term physical changes since the birth? (e.g. dyspareunia or vaginal tension)

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.....

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17. Have there been any changes in your response since the birth? (e.g. lubrication, orgasm)

.....

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18. How long did it take for your frequency, interest and enjoyment of sex to reach a stable level?

.....

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19. Is the level the same as before pregnancy? What do you think is responsible for the change?

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20. What is your present form of contraception? Do you intend to have more children?

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21. How do you feel about the advice and support you received from the Health Service after the birth?

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22. Did any aspect of medical care (e.g. investigations) cause your experience of pregnancy and childbirth to be less enjoyable? Were there any long-term effects?

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23. How do you feel about the experience of pregnancy, childbirth and motherhood?

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APPENDIX 2

Test Measures

PQ1 Maudsley Personality Inventory.

PQ2 Depression Questionnaire.

PQ3 Marital Interaction.

PQ4 Sex Behaviour Scale.

PQ5 Health in Pregnancy Questionnaire.

PQ6 Baby Questionnaire.

Project No. | | | |

P.Q.1

Instructions

Here are some questions regarding the way you behave, feel and act. After each question there is a "Yes" and "?" and a "No". Try and decide whether "Yes" or "No" represents your usual way of acting or feeling; then put a circle round the "Yes" or "No". If you find it absolutely impossible to decide, put a circle round the "?" but try not to use the "?" too often.

1. Are you happiest when you get involved in some project that calls for rapid action? YES ? NO

2. Do you sometimes feel happy, sometimes depressed, without any apparent reason? YES ? NO

3. Does your mind often wander while you are trying to concentrate? YES ? NO

4. Do you usually take the initiative in making new friends? YES ? NO

5. Are you inclined to be quick and sure in your actions? YES ? NO

6. Are you frequently "lost in thought" even when supposed to be taking part in a conversation? YES ? NO

7. Are you sometimes bubbling over with energy and sometimes very sluggish? YES ? NO

8. Would you rate yourself as a lively individual? YES ? NO

9. Would you be very unhappy if you were prevented from making numerous social contacts? YES ? NO

10. Are you inclined to be moody? YES ? NO

11. Do you have frequent ups and downs in mood, either with or without apparent cause? YES ? NO

12. Do you prefer action to planning for action? YES ? NO

Project No. | | | |

P.Q.2

These questions are concerned with how you feel about things at the present time, that means today or over the past few days.

Please answer each question by drawing a circle round the "Yes" or "No" following the question. Do not spend too much time on any one question and if you really cannot decide draw a circle round the "?".

At the present time :

1.	Do you sleep well?	YES	?	NO
2.	Do you easily lose your temper?	YES	?	NO
3.	Are you worried about your looks?	YES	?	NO
4.	Have you a good appetite?	YES	?	NO
5.	Are you as happy as you ought to be?	YES	?	NO
6.	Do you easily forget things?	YES	?	NO
7.	Have you as much interest in sex as ever?	YES	?	NO
8.	Is everything a great effort?	YES	?	NO
9.	Do you feel ashamed for any reason?	YES	?	NO
10.	Can you relax easily?	YES	?	NO
11.	Can you feel the baby is really yours?	YES	?	NO
12.	Do you want someone with you all the time?	YES	?	NO
13.	Are you easily woken up?	YES	?	NO
14.	Do you feel calm most of the time?	YES	?	NO
15.	Do you feel that you are in good health?	YES	?	NO
16.	Does food interest you less than it did?	YES	?	NO
17.	Do you cry easily?	YES	?	NO
18.	Is your memory as good as it ever was?	YES	?	NO
19.	Have you less desire for sex than usual?	YES	?	NO
20.	Have you enough energy?	YES	?	NO
21.	Are you satisfied with the way you are coping with things?	YES	?	NO
22.	Do you worry a lot about the baby?	YES	?	NO
23.	Do you feel unlike your normal self?	YES	?	NO
24.	Do you have confidence in your self?	YES	?	NO

P.Q.3 Project No. | | | |

In a marriage people behave in many different ways. In this questionnaire a range of these behaviours is presented. These behaviours can be shown by either partner or by both partners together.

Please draw a circle round the number opposite the answer you choose, showing how often each of these ways of behaving has occurred in your marriage recently. Don't spend time thinking about your answers - circle the answer that expresses your first thoughts about each item. If an item does not apply to you, e.g. those questions concerned with children - circle "very seldom".

Please answer each statement and circle only one number for each item.

	Very Seldom	Seldom	Often	Very Often
1. We discuss together whether we want to have a child.	0	1	2	3
2. When we are with friends he dominates the conversation, so that I can't get a word in.	0	1	2	3
3. After a quarrel he doesn't speak to me for days.	0	1	2	3
4. He keeps casting up mistakes which I've made in the past.	0	1	2	3
5. We quarrel because I think he doesn't bring up the children properly.	0	1	2	3
6. He notices at once when I have changed my appearance (e.g., new haircut, new clothes).	0	1	2	3
7. I would like more variety in our sex life.	0	1	2	3
8. I think that I am not the ideal partner for my husband.	0	1	2	3
9. In company he puts himself in the limelight at my expense so that he makes me look ridiculous.	0	1	2	3
10. We spend our spare time together.	0	1	2	3
11. I notice that he finds me physically attractive.	0	1	2	3
12. He complains that I'm too extravagant with money.	0	1	2	3
13. He begins jobs in the house and doesn't finish them.	0	1	2	3
14. Before going to sleep we kiss and cuddle each other.	0	1	2	3
15. He notices when I don't feel in good form.	0	1	2	3
16. He comes with me on visits to my friends.	0	1	2	3
17. He makes a row about nothing just out of spite.	0	1	2	3
18. He likes me to discuss important decisions with him.	0	1	2	3

		Very Seldom	Seldom	Often	Very Often
19.	He hits our child(ren).	0	1	2	3
20.	We laugh about the same things.	0	1	2	3
21.	He is unpleasant to my friends.	0	1	2	3
22.	When I am with him I feel nervous and tense.	0	1	2	3
23.	He avoids touching me.	0	1	2	3
24.	I notice when he's angry even if he doesn't say anything.	0	1	2	3
25.	I think that he tells me frankly about his thoughts and feelings.	0	1	2	3
26.	He loses his temper if I don't agree with his opinion.	0	1	2	3
27.	His parents interfere in our marriage. (If he no longer has parents, please circle "very seldom").	0	1	2	3
28.	He has no interest in my work.	0	1	2	3
29.	When I visit my relations he comes with me.	0	1	2	3
30.	He reacts positively to my sexual approaches.	0	1	2	3
31.	If I make a mistake he is understanding and overlooks it.	0	1	2	3
32.	He praises me when I have done something good.	0	1	2	3
33.	We make plans for the future together.	0	1	2	3
34.	If I am worked up about something he is very understanding and tries to calm me down.	0	1	2	3
35.	When he tells me about his work he likes to know my opinion.	0	1	2	3
36.	He supports me when I give the child(ren) instructions or tasks to do.	0	1	2	3
37.	I trust my partner.	0	1	2	3
38.	His parents always take his part when we've quarrelled. (If he no longer has parents please circle "very seldom").	0	1	2	3
39.	He asks my advice before he makes a decision.	0	1	2	3
40.	He flirts with other women.	0	1	2	3
41.	He just doesn't want to know about sex.	0	1	2	3
42.	He says "yes, yes" without having really listened to what I'm saying.	0	1	2	3
43.	He kisses me lovingly.	0	1	2	3

		Very Seldom	Seldom	Often	Very Often
44.	He criticises me for having behaved wrongly in company.	0	1	2	3
45.	He is extremely particular about cleanliness in the house.	0	1	2	3
46.	He gives me sincere compliments on my appearance.	0	1	2	3
47.	He reads the newspapers or watches television and doesn't really listen when I tell him something.	0	1	2	3
48.	He kisses me out of a sense of duty.	0	1	2	3
49.	I tell my partner frankly about the things which concern me.	0	1	2	3
50.	He doesn't bother about our child(ren).	0	1	2	3
51.	He criticises me in a sarcastic way.	0	1	2	3
52.	We take part in sport together.	0	1	2	3
53.	He shouts at me when something goes wrong.	0	1	2	3
54.	He turns away when I want to kiss him.	0	1	2	3
55.	When we're going out together he isn't ready on time.	0	1	2	3
56.	He shouts at me in front of other people.	0	1	2	3
57.	I feel the need to get to know other people.	0	1	2	3
58.	When he has obviously treated me wrongly he apologises.	0	1	2	3
59.	We decide together how to spend our income.	0	1	2	3
60.	When he comes home he pays no attention to me.	0	1	2	3
61.	Usually we talk together in the evening for at least half an hour.	0	1	2	3
62.	If I'm feeling depressed he tries to cheer me up.	0	1	2	3
63.	He speaks disapprovingly about my parents.	0	1	2	3
64.	When he comes home he sits down in front of the television immediately.	0	1	2	3
65.	He is impatient with our child(ren).	0	1	2	3
66.	He brings me presents, just to make me happy, even if it's not a special occasion.	0	1	2	3

		Very Seldom	Seldom	Often	Very Often
67.	We play games together, e.g. Scrabble, cards, monopoly, draughts, chess etc.	0	1	2	3
68.	We go out socially together.	0	1	2	3
69.	We quarrel when we discuss money matters.	0	1	2	3
70.	In the evenings he asks me how things have gone for me during the day.	0	1	2	3
71.	We quarrel in front of the child(ren).	0	1	2	3
72.	His mother criticises my housekeeping.	0	1	2	3
73.	He makes efforts to progress in his job.	0	1	2	3
74.	He asks me if he can help me in the house.	0	1	2	3
75.	He helps with the washing up.	0	1	2	3

P.Q.4

Project No. | | | |

The following questions are concerned with various aspects of your sex life during the three months before you became pregnant.*

Please answer each question by drawing a circle round the number which comes closest to your own experience.

	Less than once a month	Once or twice a month	Once a week	2 or 3 times a week	4 or more times a week
1. We had sexual intercourse.	0	1	2	3	4
2. I felt too tired for sex.	0	1	2	3	4
3. I reached a climax (orgasm) during intercourse.	0	1	2	3	4
4. I found it difficult to respond sexually.	0	1	2	3	4
5. I had pleasant thoughts about sex.	0	1	2	3	4
6. I found sex enjoyable.	0	1	2	3	4
7. I felt tense or nervous during sex.	0	1	2	3	4
8. I experienced pain or discomfort during intercourse.	0	1	2	3	4
9. My husband made the first move in sex.	0	1	2	3	4
10. I felt disgusted by sexual intercourse.	0	1	2	3	4
11. I worried about sex.	0	1	2	3	4
12. My husband found sex enjoyable.	0	1	2	3	4
13. I found it easy to get sexually excited.	0	1	2	3	4
14. I found sex messy or distasteful.	0	1	2	3	4
15. I made the first move in sex.	0	1	2	3	4
16. I felt sexually unattractive.	0	1	2	3	4
17. We varied our love making (e.g. tried different positions for intercourse).	0	1	2	3	4
18. I wanted to have sexual intercourse.	0	1	2	3	4

* This instruction was changed to "last three months" at the follow-up administration.

Project No. | | | |

P.Q.5

Instructions

Here are some questions about your health during pregnancy. After each question there is a "Yes" and a "No". Try and decide whether "Yes" or "No" best represents how you felt during pregnancy; then put a circle round the "Yes" or "No".

1.	Did you have much indigestion?	YES	NO
2.	Did you have much sickness?	YES	NO
3.	Were you troubled by headaches?	YES	NO
4.	Did you have difficulty with constipation?	YES	NO
5.	Did you have a poor appetite?	YES	NO
6.	Did you often feel tired and lacking in energy?	YES	NO
7.	Did you have any spells of faintness?	YES	NO
8.	Did you often find yourself out of breath?	YES	NO
9.	Did you often have a thumping heart?	YES	NO
10.	Did you have tingling in your fingers or toes?	YES	NO
11.	Were you troubled by cramps in your legs?	YES	NO
12.	Did you have much backache?	YES	NO
13.	Did your legs often feel tired?	YES	NO
14.	Did you often have aching in neck and shoulders?	YES	NO
15.	Were you often troubled by a dragging feeling in your tummy?	YES	NO
16.	Were you troubled by tenderness in your breasts?	YES	NO
17.	Did you have much itching in the private parts?	YES	NO
18.	Did you often need to go to the toilet quickly?	YES	NO
19.	Did you have much itching of the skin?	YES	NO
20.	Were you troubled by a great deal of perspiration?	YES	NO
21.	Did you sometimes have spots before your eyes?	YES	NO

Project No. | | | |

P.Q.6

Average Baby

Although this may be your first baby, you probably have some ideas of what little babies are like. Please put a cross "X" in the space that best describes the AVERAGE Baby.

1. How much crying do you think the average baby does?

a great deal | a good bit | moderate amount | very little | none

2. How much trouble do you think the average baby has in feeding?

a great deal | a good bit | moderate amount | very little | none

3. How much spitting up or vomiting do you think the average baby does?

a great deal | a good bit | moderate amount | very little | none

4. How much difficulty do you think the average baby has in sleeping?

a great deal | a good bit | moderate amount | very little | none

5. How much difficulty does the average baby have with bowel movements?

a great deal | a good bit | moderate amount | very little | none

6. How much trouble do you think the average baby has in settling down to a predictable pattern of eating and sleeping?

a great deal | a good bit | moderate amount | very little | none

Your Baby

Place an "X" in the space that best describes your own baby.

1. How much crying did your baby do?

a great deal	a good bit	moderate amount	very little	none

2. How much trouble do you think your baby had in feeding?

a great deal	a good bit	moderate amount	very little	none

3. How much spitting up or vomiting did your baby do?

a great deal	a good bit	moderate amount	very little	none

4. How much difficulty did your baby have in sleeping?

a great deal	a good bit	moderate amount	very little	none

5. How much difficulty did your baby have with bowel movements?

a great deal	a good bit	moderate amount	very little	none

6. How much trouble did your baby have in settling down to a predictable pattern of eating and sleeping?

a great deal	a good bit	moderate amount	very little	none

APPENDIX 3

Marital Scales

Marital Scales 1 - 8.

Intercorrelations of Scales.

Marital Scale 1 (MS1)

No.	Item	Loading
9	In company he puts himself in the limelight at my expense so that he makes me look ridiculous.	0.86
12	He complains that I'm too extravagant with money.	0.53
17	He makes a row about nothing just out of spite.	0.68
22	When I am with him I feel nervous and tense.	0.82
54	He turns away when I want to kiss him.	0.60
56	He shouts at me in front of other people.	0.72
60	When he comes home he pays no attention to me.	0.38

Marital Scale 2 (MS2)

No.	Item	Loading
6	He notices at once when I have changed my appearance (e.g. new haircut, new clothes).	0.42
18	He likes me to discuss important decisions with him.	0.69
20	We laugh about the same things.	0.76
25	I think that he tells me frankly about his thoughts and feelings.	0.53
32	He praises me when I have done something good.	0.63
37	I trust my partner.	0.72
43	He kisses me lovingly.	0.55

Marital Scale 3 (MS3)

No.	Item	Loading
21	He is unpleasant to my friends.	0.57
63	He speaks disapprovingly about my parents.	0.55
69	We quarrel when we discuss money matters.	0.57
72	His mother criticises my housekeeping.	0.72

Marital Scale 4 (MS4)

No.	Item	Loading
42	He says "yes, yes" without having really listened to what I'm saying.	0.81
47	He reads the newspaper or watches television and doesn't really listen when I tell him something.	0.76
64	When he comes home he sits down in front of the television immediately.	0.54

Marital Scale 5 (MS5)

No.	Item	Loading
3	After a quarrel he doesn't speak to me for days.	0.82
4	He keeps casting up mistakes which I've made in the past.	0.61
8	I think that I am not the ideal partner for my husband.	0.51

Marital Scale 6 (MS6)

No.	Item	Loading
11	I notice that he finds me physically attractive.	0.50
23	He avoids touching me.	-0.55
30	He reacts positively to my sexual approaches.	0.79
41	He just doesn't want to know about sex.	-0.51

Marital Scale 7 (MS7)

No.	Item	Loading
74	He asks me if he can help me in the house.	0.77
75	He helps with the washing up.	0.80

Marital Scale 8 (MS8)

No.	Item	Loading
10	We spend our spare time together.	0.48
67	We play games together, e.g. Scrabble, cards, monopoly, draughts, chess etc.	0.47
68	We go out socially together.	0.82

Inter-Correlation of Marital Scales

	MS1	MS2	MS3	MS4	MS5	MS6	MS7	MS8
MS1	1.00 S=0.001	-0.02 S=0.40	0.23 S=0.01	0.27 S=0.003	0.30 S=0.001	-0.16 S=0.05	0.005 S=0.48	-0.23 S=0.01
MS2	-0.02 S=0.40	1.00 S=0.001	-0.18 S=0.03	-0.12 S=0.12	-0.06 S=0.24	0.27 S=0.003	0.17 S=0.04	0.28 S=0.002
MS3	0.23 S=0.01	-0.18 S=0.03	1.00 S=0.001	0.13 S=0.08	0.33 S=0.001	-0.17 S=0.04	-0.62 S=0.39	-0.08 S=0.20
MS4	0.27 S=0.003	-0.11 S=0.11	0.13 S=0.08	1.00 S=0.001	0.07 S=0.22	-0.31 S=0.001	-0.01 S=0.44	-0.04 S=0.31
MS5	0.30 S=0.001	-0.06 S=0.24	0.33 S=0.001	0.07 S=0.22	1.00 S=0.001	-0.08 S=0.20	-0.11 S=0.13	0.07 S=0.23
MS6	-0.16 S=0.05	0.27 S=0.003	-0.17 S=0.04	-0.31 S=0.001	-0.08 S=0.20	1.00 S=0.001	0.05 S=0.30	0.11 S=0.11
MS7	0.005 S=0.48	0.16 S=0.04	-0.02 S=0.39	-0.01 S=0.44	-0.11 S=0.13	0.05 S=0.30	1.00 S=0.001	0.18 S=0.03
MS8	-0.23 S=0.01	0.28 S=0.002	-0.08 S=0.2	-0.04 S=0.31	0.07 S=0.23	0.11 S=0.11	0.18 S=0.03	1.00 S=0.001

APPENDIX 4

Sex Behaviour Scales

Sex Behaviour Scales 1 - 7.

Sex Behaviour Scale 1 (SB1)

No.	Item	Loading
1.	We had sexual intercourse.	0.75
3.	I reached a climax (orgasm) during intercourse.	0.81
6.	I found sex enjoyable.	0.75

Sex Behaviour Scale 2 (SB2)

No.	Item	Loading
7.	I felt tense or nervous during sex.	0.58
10.	I felt disgusted by sexual intercourse.	0.84
14.	I found sex messy or distasteful.	0.74

Sex Behaviour Scale 3 (SB3)

No.	Item	Loading
9.	My husband made the first move in sex.	0.89
12.	My husband found sex enjoyable.	0.53

Sex Behaviour Scale 4 (SB4)

No.	Item	Loading
13.	I found it easy to get sexually excited.	0.69
18.	I wanted to have sexual intercourse.	0.78

Sex Behaviour Scale 5 (SB5)

No.	Item	Loading
2.	I felt too tired for sex.	0.77
4.	I found it difficult to respond sexually.	0.76
16.	I felt sexually unattractive.	0.42

Sex Behaviour Scale 6 (SB6)

No.	Item	Loading
5.	I had pleasant thoughts about sex.	0.48
15.	I made the first move in sex.	0.60
17.	We varied our love-making (e.g. tried different positions for intercourse).	0.69

Sex Behaviour Scale 7 (SB7)

No.	Item	Loading
4.	I found it difficult to respond sexually.	0.42
7.	I felt tense or nervous during sex.	0.43
8.	I experienced pain or discomfort during intercourse.	0.84

APPENDIX 5

Additional Tables.

Table 1

SBS Scores by Place of Birth

Place of Birth	Wife			Husband		
	N	Mean	S.D.	N	Mean	S.D.
Edinburgh	59	-6.2	9.0	58	-7.1	7.4
Other Lothians	3	-6.7	5.5	3	-2.7	2.9
Other U.K.	15	-3.7	6.5	16	-3.7	8.4
Non U.K.	5	-7.6	5.2	3	0.3	17.0

F = 0.35, p = n.s. F = 1.2, p = n.s.

Table 2

SBS Scores by Type of Accommodation

Type	N	Mean	S.D.
Owner Occupied	80	-5.4	8.2
Local Auth.	16	-7.3	7.0
Other Rented	4	-11.5	5.8
Parents	1	0.0	-

F = 1.12, p = n.s.

Table 3

SBS Scores by Religion

Affiliation	Wife			Husband		
	N	Mean	S.D.	N	Mean	S.D.
Protestant	82	-5.9	8.1	72	-6.1	8.6
Roman Catholic	10	-7.3	7.2	8	-6.6	5.8
Jewish	0	-	-	1	-16.0	-
Other	9	-6.2	8.0	20	-4.5	6.5

F = 0.19, p = n.s. F = 0.78, p = n.s.

Table 4

SBS Scores by Education

Level Attained	Wife			Husband		
	N	Mean	S.D.	N	Mean	S.D.
No. Qualifications	32	-6.4	7.4	34	-4.4	7.2
CSE/'O' Level	15	-4.4	8.8	11	-3.3	5.2
Highers/'A' Level	15	-4.4	6.5	10	-8.3	10.1
Graduate	19	-8.2	11.1	36	-6.9	9.2

F = 0.73, p = n.s. F = 1.06, p = n.s.

Table 5

SBS Scores by Occupation

Type	N	Mean	S.D.
None	26	-5.7	9.5
Casual	1	0.0	-
Part-time	13	-7.9	7.5
Full-time	61	-5.6	7.5

F = 0.48, p = n.s.

Table 6

SBS Scores by Parity

Parity	N	Mean	S.D.
0	56	-6.9	9.2
1*	45	-4.6	6.0

F = 1.97, p = n.s.

*includes one subject with twins.

Table 7

SBS Scores by Length of Marriage

Years	N	Mean	S.D.
(0 - 2)	20	-5.8	6.8
(3 - 6)	63	-6.0	9.1
(7 - 12)	18	-5.5	4.7

F = 0.30, p = n.s.

Table 8

SBS Scores by Socio-economic Status

Classification	N	Mean	S.D.
I	19	-6.4	7.5
II	35	-6.9	9.1
III	40	-5.0	7.6
IV	6	-3.7	4.6
V	1	-11.0	0

F = 0.49, p = n.s.

Table 9

SBS Scores by Previous Pregnancies

Number of Pregnancies	N	Mean	S.D.
0	46	-7.3	9.4
1	42	-4.9	6.8
2	11	-3.8	5.5
3	1	-9.0	-
4	1	-2.0	-

F = 0.80, p = n.s.

Table 10

SBS Scores by Previous Abortion

Abortion	N	Mean	S.D.
No	83	-6.2	8.2
Spontaneous	13	-4.1	6.8
Therapeutic	5	-5.0	7.4

F = 0.40, p = n.s.

Table 11

Previous Abnormal Births and SBS Scores

Abnormality	N	Mean	S.D.
Yes	4	-5.9	8.0
No	97	-4.3	7.1

F = 0.17, p = n.s.

Table 12

SBS Scores and Amniocentesis

Amniocentesis	N	Mean	S.D.
Yes	8	-6.8	7.8
No	93	-5.8	8.0

F = 0.10, p = n.s.

Table 13

SBS Scores and Decision about Termination

Decision	N	Mean	S.D.
None	78	-6.2	8.0
Termination	21	-3.3	6.8
No Termination	2	-18.5	2.1

$F = 3.9$, $p < 0.05$

Table 14

SBS Scores and Episiotomy

Episiotomy	N	Mean	S.D.
No	16	-8.9	12.1
Yes	81	-5.4	7.0
Tear	4	-3.5	6.1

$F = 1.45$, p = n.s.

Table 15

SBS Scores and delivery complications

Complications	N	Mean	S.D.
Yes	35	-8.0	8.5
No	66	-4.8	7.5

$F = 3.77$, p = n.s.

Table 16

SBS Scores and Health Problems in the Puerperium

Health Problems	N	Mean	S.D.
None	77	-5.8	8.3
Self	13	-6.7	7.3
Baby	11	-5.5	6.5

F = 0.08, p = n.s.

Table 17

SBS Scores and problems with the Baby

Problems with baby	N	Mean	S.D.
None	62	-5.6	7.7
Minor	33	-6.1	8.9
Serious	6	-7.8	5.7

F = 0.22, p = n.s.

Table 18

SBS Scores and Baby Questionnaire (PQ6) Scores

Range (PQ6)	N	Mean	S.D.
(-14 to -3)	13	-5.8	5.4
(-2 to 0)	31	-8.1	8.4
(1 to 3)	36	-4.9	7.3
(4 to 36)	21	-4.4	9.5

F = 1.21, p = n.s.

Table 19

SBS Scores and length of time in hospital

Days in hospital	N	Mean	S.D.
(0 - 4)	9	-4.0	3.2
(5 - 6)	63	-5.2	8.1
(7 - 8)	10	-3.8	4.9
9+	19	-10.1	9.4

$F = 2.42$, p = n.s.

Table 20

SBS Scores and help at home

Help at home	N	Mean	S.D.
Yes	58	-4.9	6.2
No	48	-7.1	9.8

$F = 1.88$, p = n.s.

Table 21

SBS Scores and Reactions to Breast Feeding

Reaction	N	Mean	S.D.
d.k.	11	-3.5	7.1
In favour	57	-5.9	9.1
Against	19	-5.1	4.3
Disappointment	14	-8.9	7.3

F = 1.09, p = n.s.

Table 22

SBS Scores and Husband's reaction to Breast Feeding

Husband's reaction	N	Mean	S.D.
None/d.k.	32	-4.7	5.4
In favour	64	-6.6	9.1
Against	5	-5.0	6.0

F = 0.64, p = n.s.

Table 23

SBS Scores and length of Vaginal Discharge

Vaginal Discharge (weeks)	N	Mean	S.D.
(0 - 2)	12	-8.0	7.9
(3 - 4)	42	-5.4	8.0
(5 - 6)	31	-5.2	6.1
7+	16	-6.9	11.0

$F = 0.49$, p = n.s.

Table 24

SBS Scores and return of Menstruation

First Period (Weeks)	N	Mean	S.D.
(0 - 7)	44	-5.4	7.9
8+	57	-6.2	8.1

$F = 0.27$, p = n.s.

Table 25

SBS Scores and timing of cessation of Intercourse

Last intercourse before birth (weeks)	N	Mean	S.D.
(0 - 3)	24	-4.8	7.5
(4 - 7)	29	-7.0	7.2
(8 - 14)	31	-8.1	7.6
15+	17	-1.5	9.3

$F = 3.03, \quad p < 0.05$

Table 26

SBS Scores and timing of resumption of Intercourse

First intercourse after birth (weeks)	N	Mean	S.D.
(0 - 5)	39	-5.7	8.0
(6 - 12)	59	-6.1	8.0
13+	3	-4.0	9.0

$F = 0.10, \quad p = n.s.$

Table 27

SBS Scores by MPI (PQ1) Scores during Pregnancy

Ranges PQ1 Scores	Neuroticism			Extraversion		
	N	Mean	S.D.	N	Mean	S.D.
(0 - 3)	16	-5.3	8.6	15	-6.4	7.0
(4 - 6)	34	-5.0	8.3	30	-6.2	6.5
(7 - 9)	28	-6.3	8.7	29	-4.9	9.3
(10 - 12)	23	-7.1	6.4	27	-6.2	8.8

F = 0.34, p = n.s. F = 0.12, p = n.s.

Table 28

SBS Scores and M.P.I. (PQ1) Scores in the late Postpartum Period

Ranges PQ1 Scores	Neuroticism			Extraversion		
	N	Mean	S.D.	N	Mean	S.D.
(0 - 3)	21	-3.2	7.5	12	-5.9	7.8
(4 - 6)	33	-7.2	8.0	36	-4.9	6.2
(7 - 9)	18	-3.3	8.7	24	-7.9	7.0
(10 - 12)	29	-7.9	7.2	29	-5.4	10.5

F = 2.43, p = n.s. F = 0.74, p = n.s.

Table 29

SBS Scores and Adjustment Problems

Problems	N	Mean	S.D.
None	81	-5.5	7.9
Physical	14	-5.0	7.1
Anxiety/ Depression	6	-12.7	8.9

F = 2.40, p = n.s.

Table 30

SBS Scores by Depression Questionnaire (PQ2) Scores during Pregnancy

Ranges PQ2 Scores	N	Mean	S.D.
(0 - 8)	22	-6.5	10.2
(9 - 14)	27	-5.3	6.9
(15 - 20)	29	-5.2	8.6
(21 - 36)	23	-6.9	6.2

F = 0.26, p = n.s.

Table 31

SBS Scores and Depression Questionnaire (PQ2) Scores in early Postpartum Period

Ranges PQ2 Scores	N	Mean	S.D.
(0 - 7)	28	-5.4	8.1
(8 - 13)	29	-6.8	10.3
(14 - 19)	19	-5.6	7.2
(20 - 41)	25	-5.6	5.6

F = 0.16, p = n.s.

Table 32

SBS Scores and Depression in early Postpartum Period

Incidence	N	Mean	S.D.
None	62	-5.2	8.7
Mild	25	-7.3	7.4
More serious	14	-6.2	5.1

F = 0.66, p = n.s.

Table 33

SBS Scores and Major Life Events

Major events	N	Mean	S.D.
Nil	62	-6.0	8.3
House move	22	-5.4	8.2
Illness in family	6	-6.5	6.7
Other	11	-5.9	7.1

F = 0.05, p = n.s.

Table 34

SBS Scores and changes in Life Style

Changes	N	Mean	S.D.
Nil	22	-5.7	9.1
More complicated	43	-5.1	7.1
More stress	7	-8.0	7.7
More relaxed	5	-11.4	8.7
Home centred	24	-5.6	8.4

F = 0.82, p = n.s.

Table 35

SBS Scores and reductions in interest outside the Home

Interests outside home	N	Mean	S.D.
Never had any	38	-5.3	9.3
No	22	-7.4	5.9
A little	17	-4.0	5.5
Completely	24	-6.7	8.9

F = 0.71, p = n.s.

Table 36

SBS Scores and intention to seek Employment

Intending to seek employment	N	Mean	S.D.
Yes	25	-7.2	8.1
No	76	-5.5	8.0

F = 0.85, p = n.s.

Table 37

SBS Scores and changes in the Marital Relationship

General Marital Relationship	N	Mean	S.D.
No change	42	-5.1	9.2
Improved	41	-6.1	7.8
Deteriorated	18	-7.1	4.8

F = 0.42, p = n.s.

Table 38

Advice about Sex and SBS Scores

Advice	N	Mean	S.D.
Unsystematic	90	-5.9	7.3
G.P.	7	-9.6	14.9
Obstetrician or Midwife	4	1.0	3.7

$F = 2.29$, p = n.s.

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